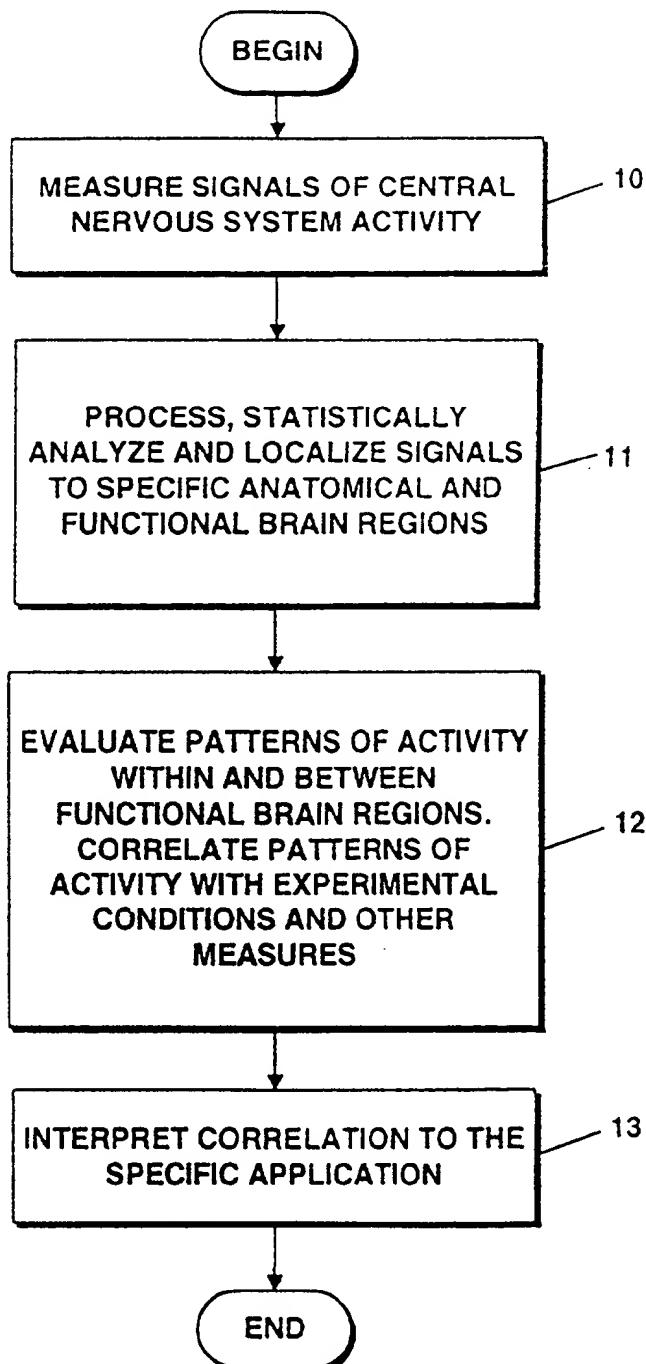
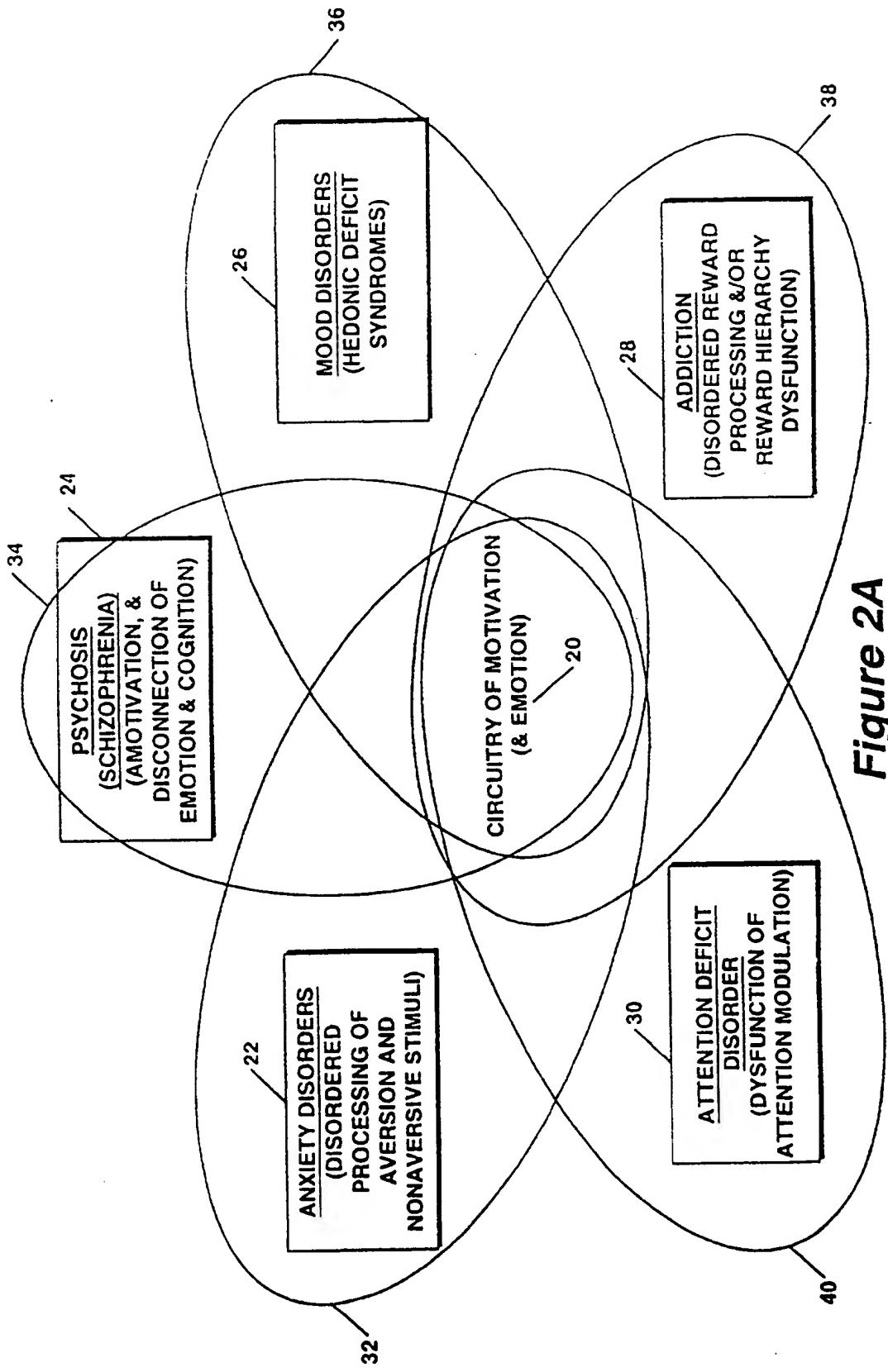


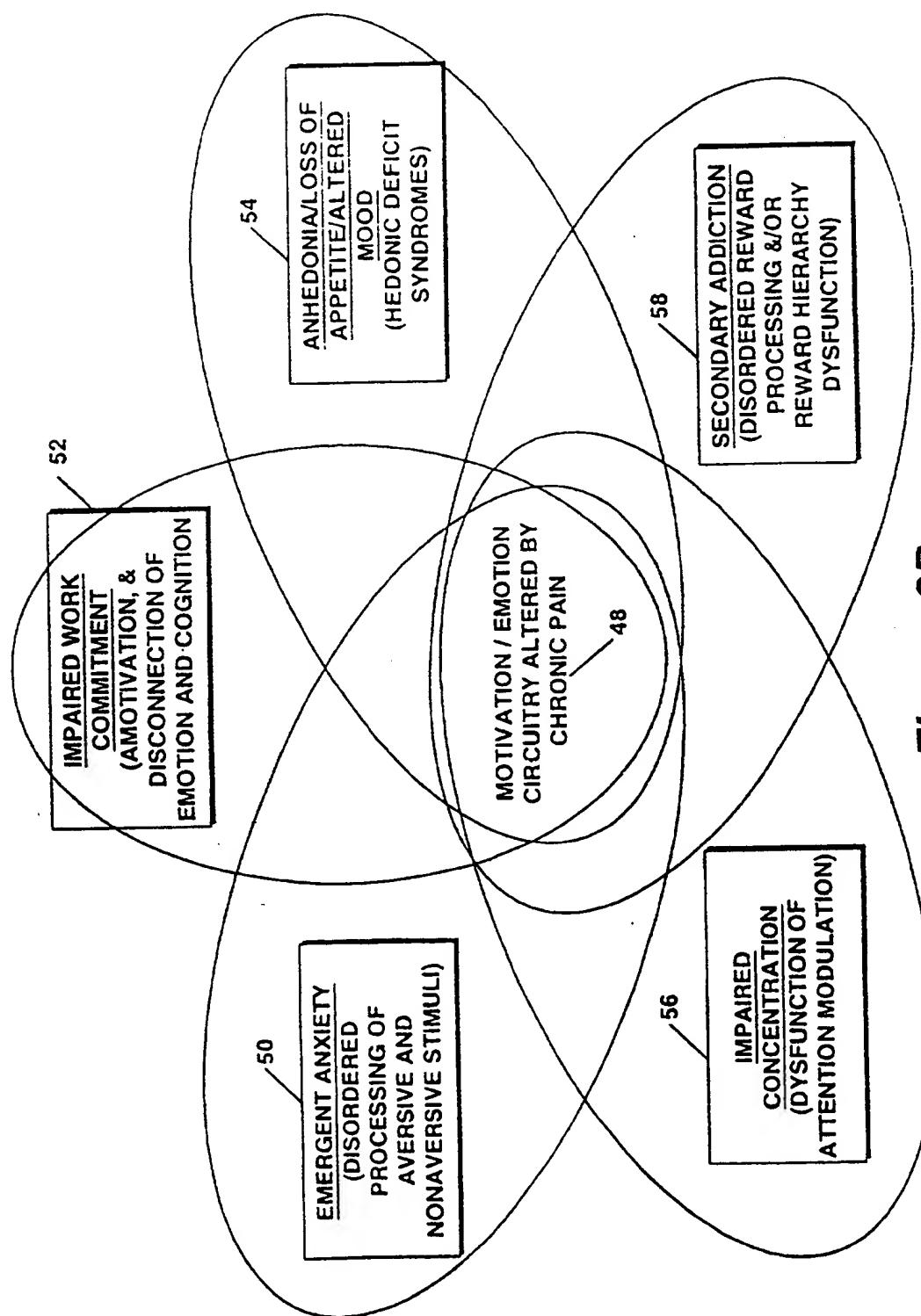
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*Figure 1*

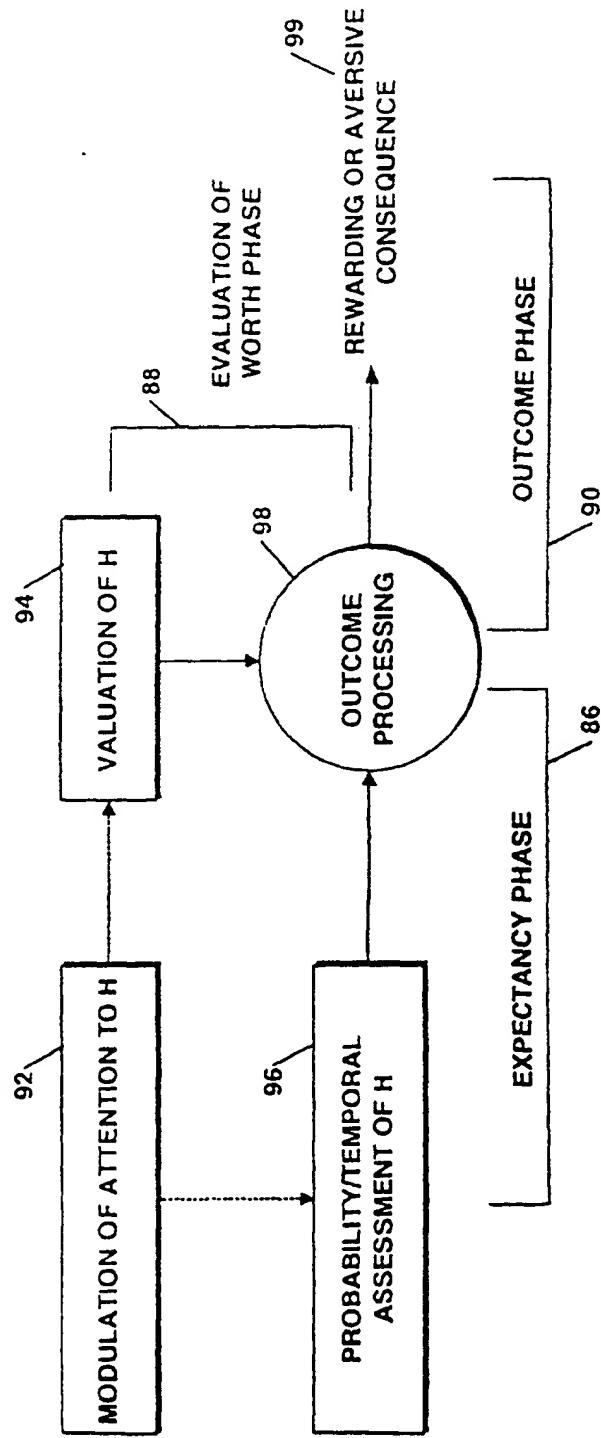
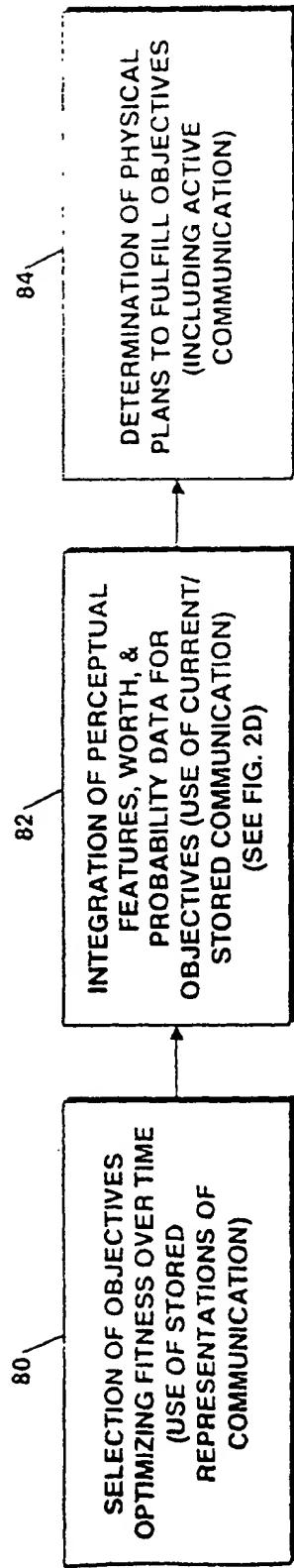


**Figure 2A**



**Figure 2B**

*Figure 2C*



*Figure 2D*

METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
 PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
 Lino Becerra, Et Al.  
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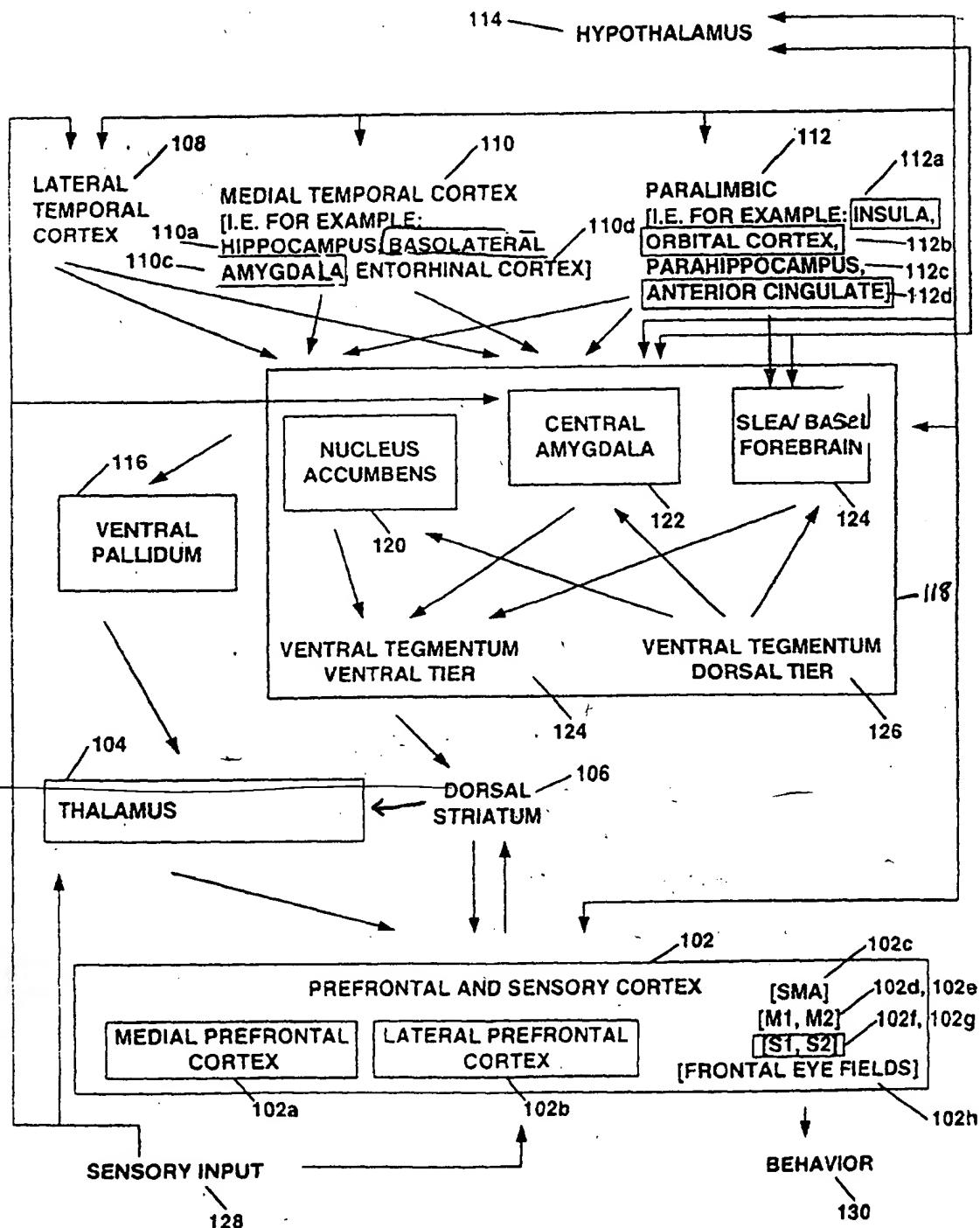
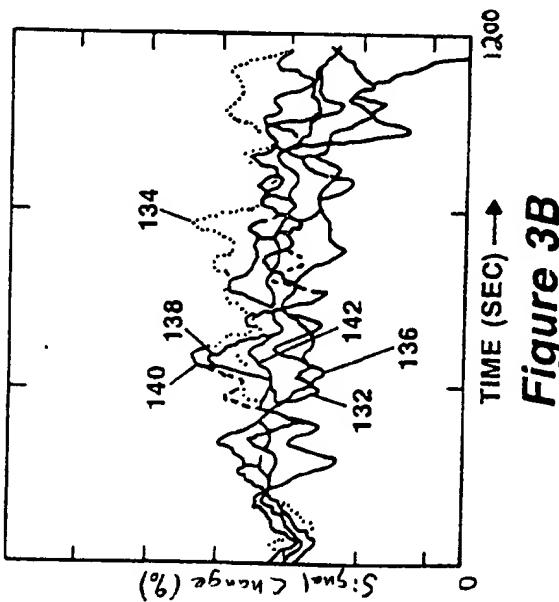
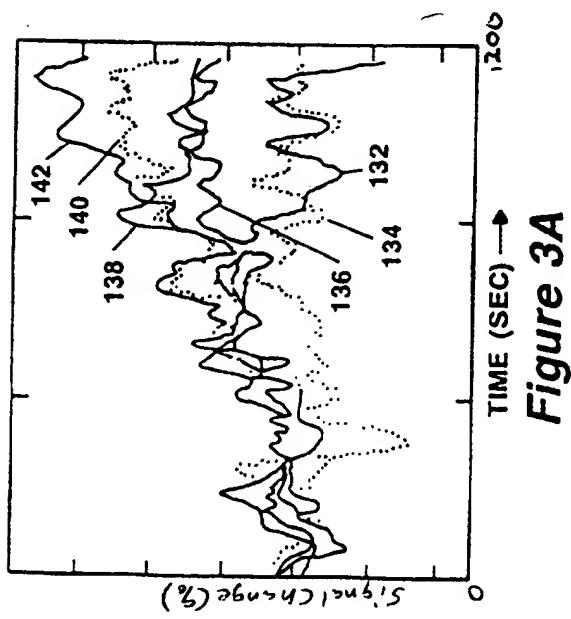
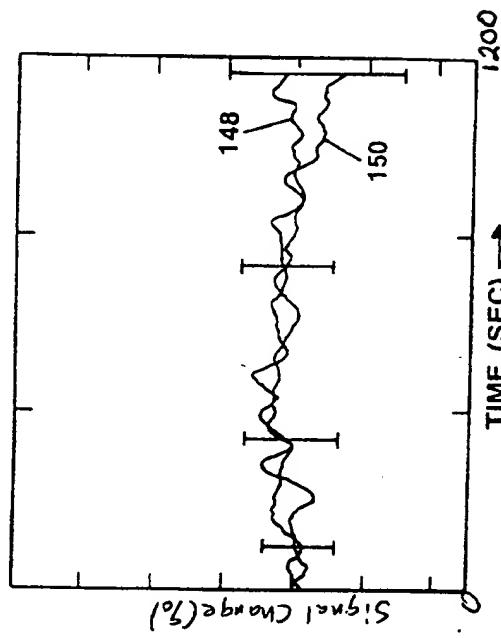
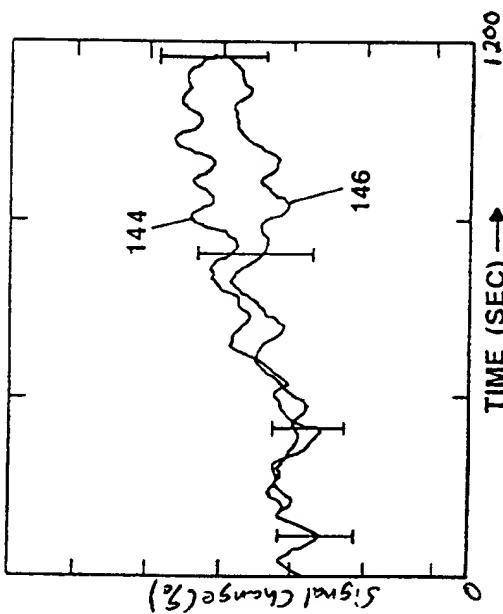


Figure 3

METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
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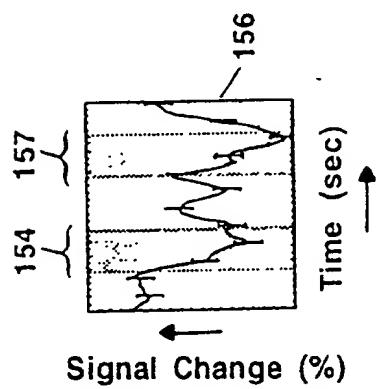


Figure 3F

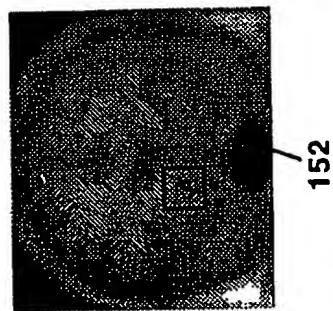
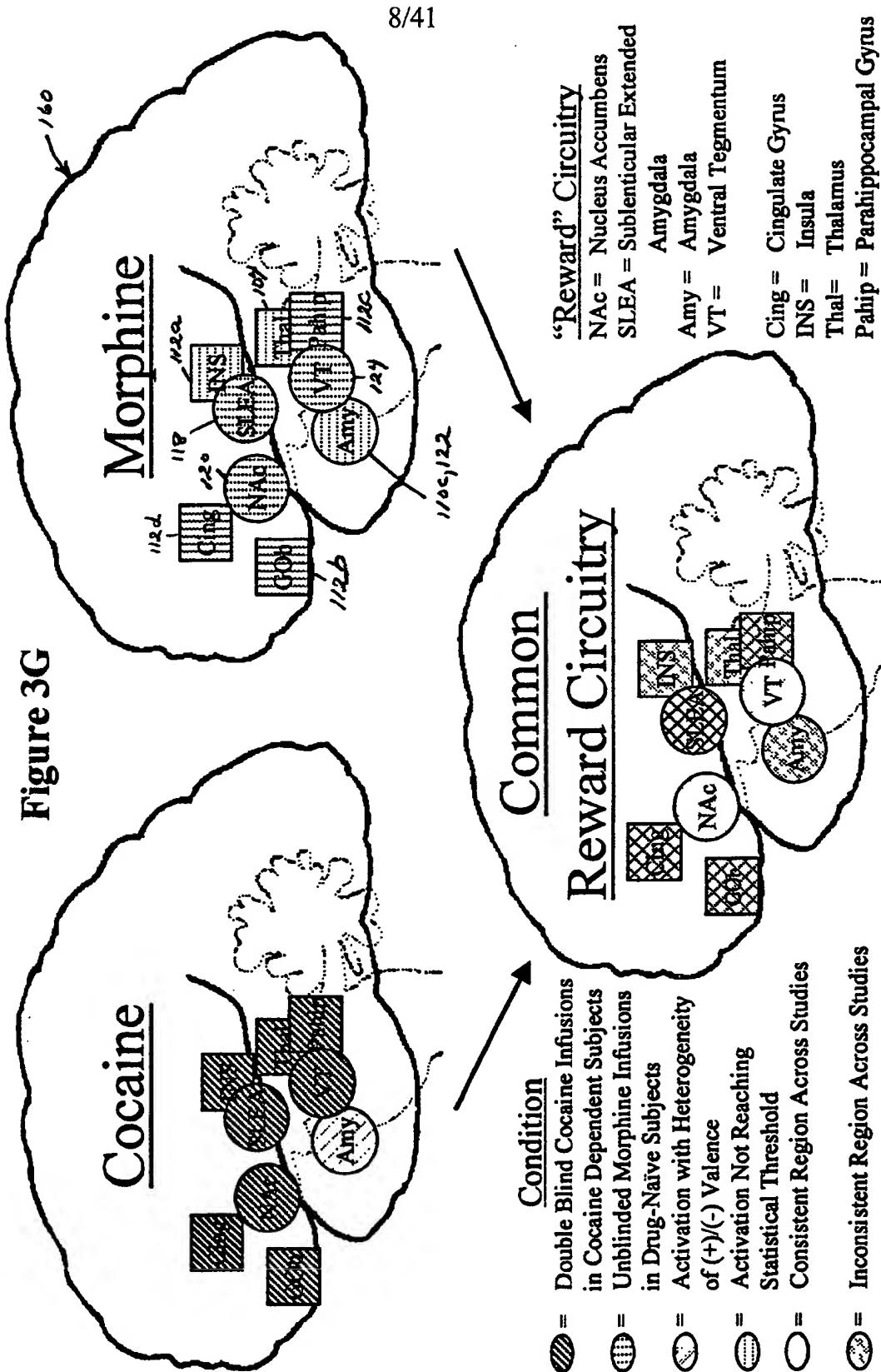


Figure 3E

Figure 3G



METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
CASE NO. MGH-004BUS

170 172 174 176 178 180

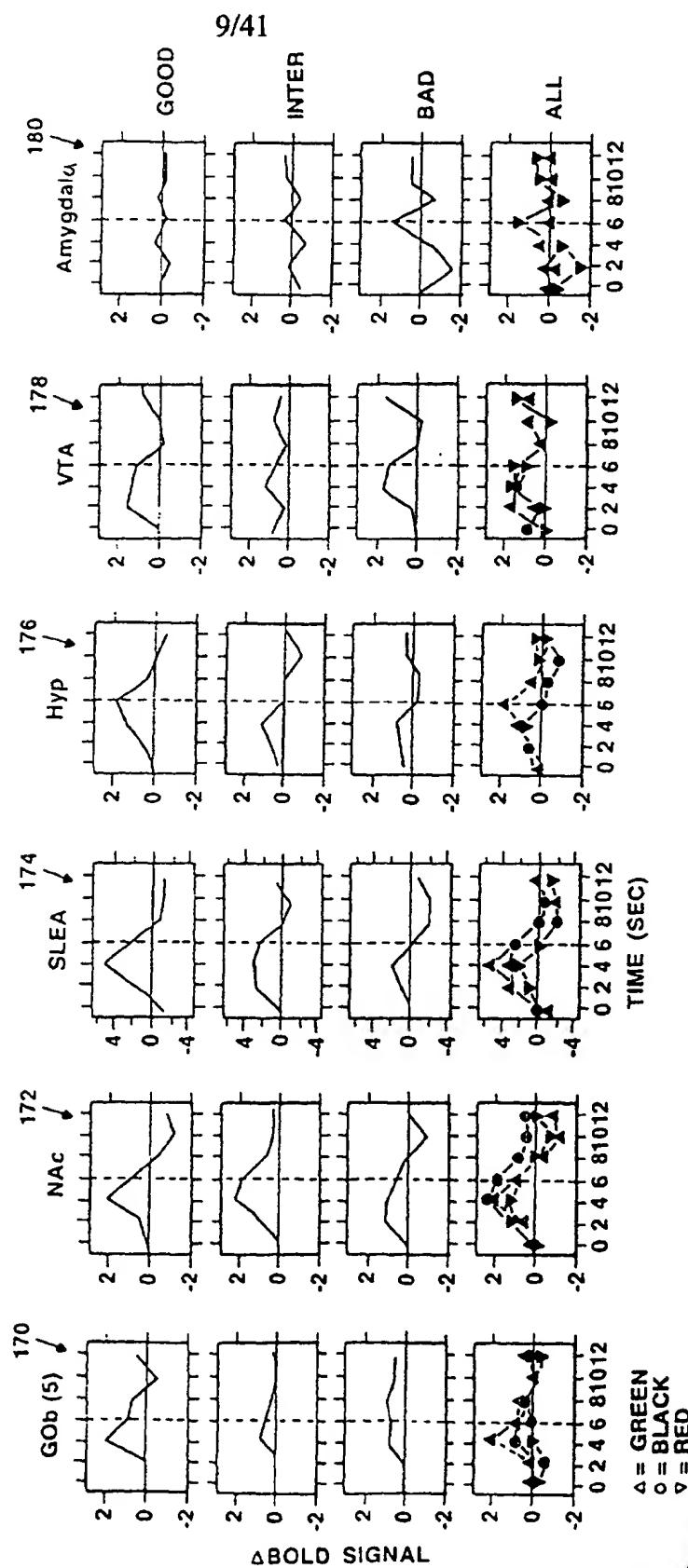


Figure 3H

METHOD AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
CASE NO. MGH-004BUS

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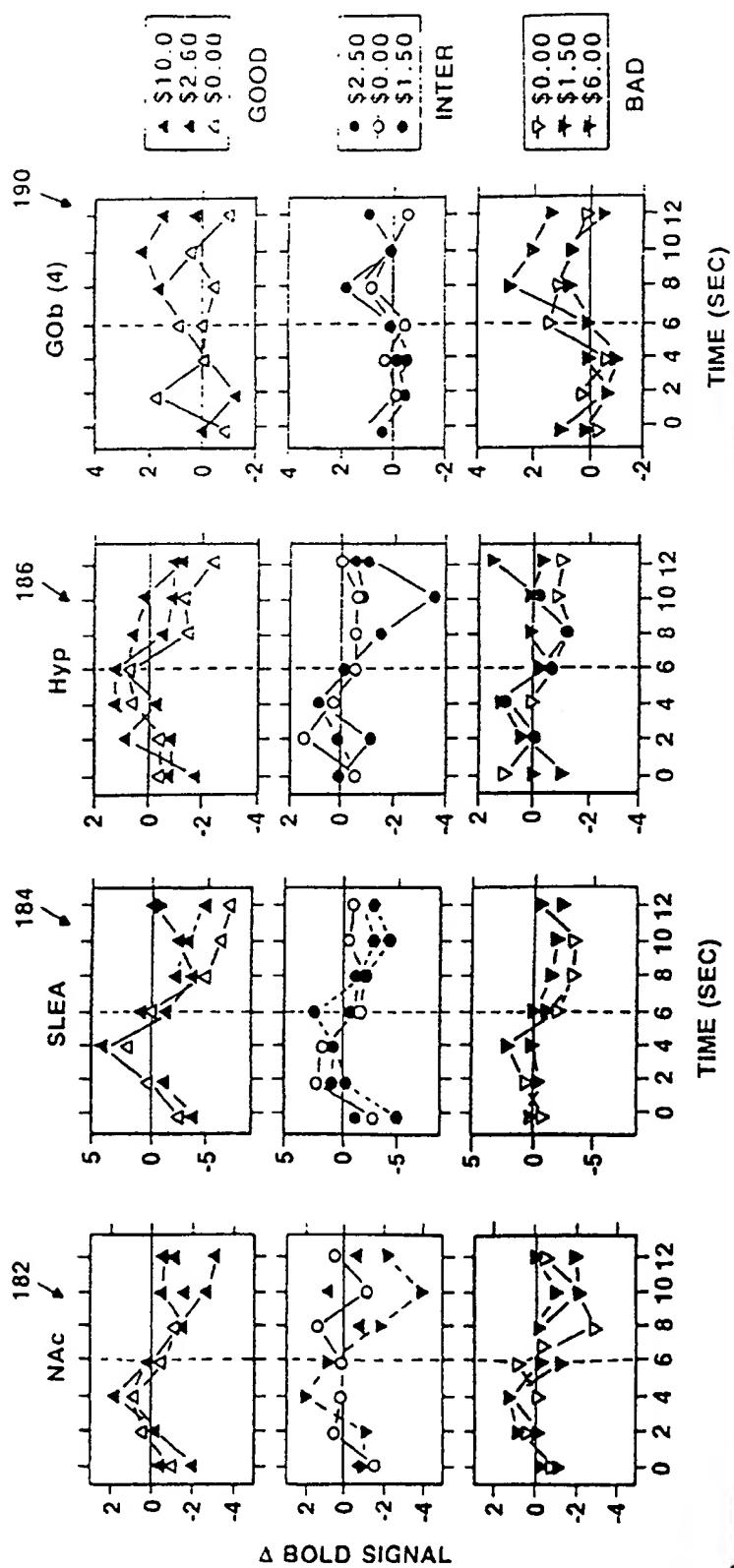


Figure 3I

METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES

Lino Becerra, Et Al.  
CASE NO. MGH-004BUS

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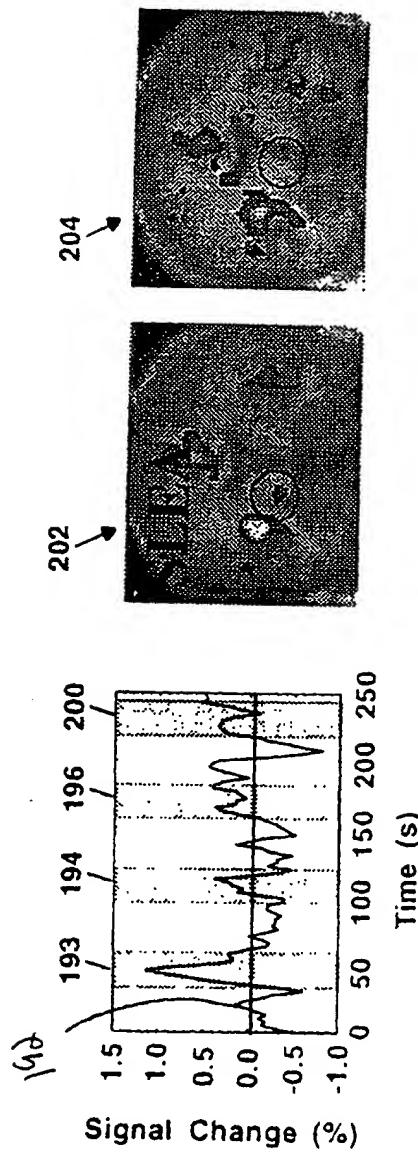


Figure 3K      Figure 3L

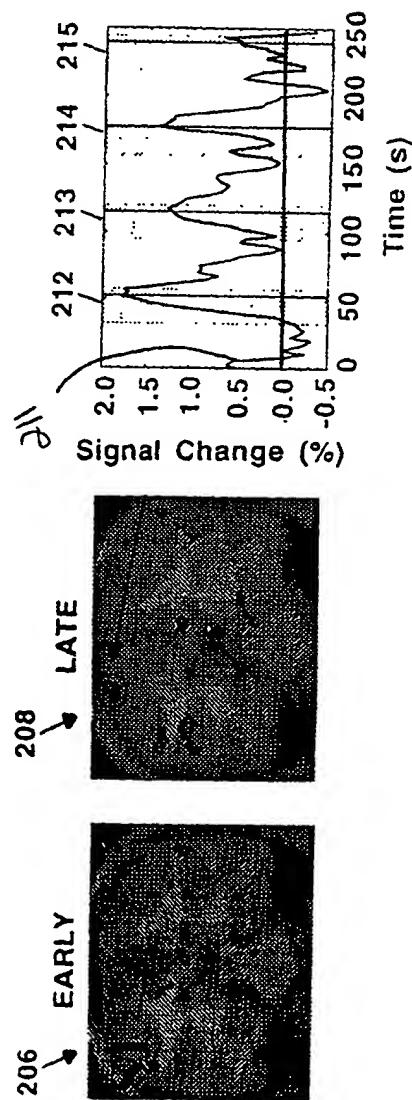


Figure 3M      Figure 3N      Figure 3O

METHOD AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES

Lino Becerra, Et Al.  
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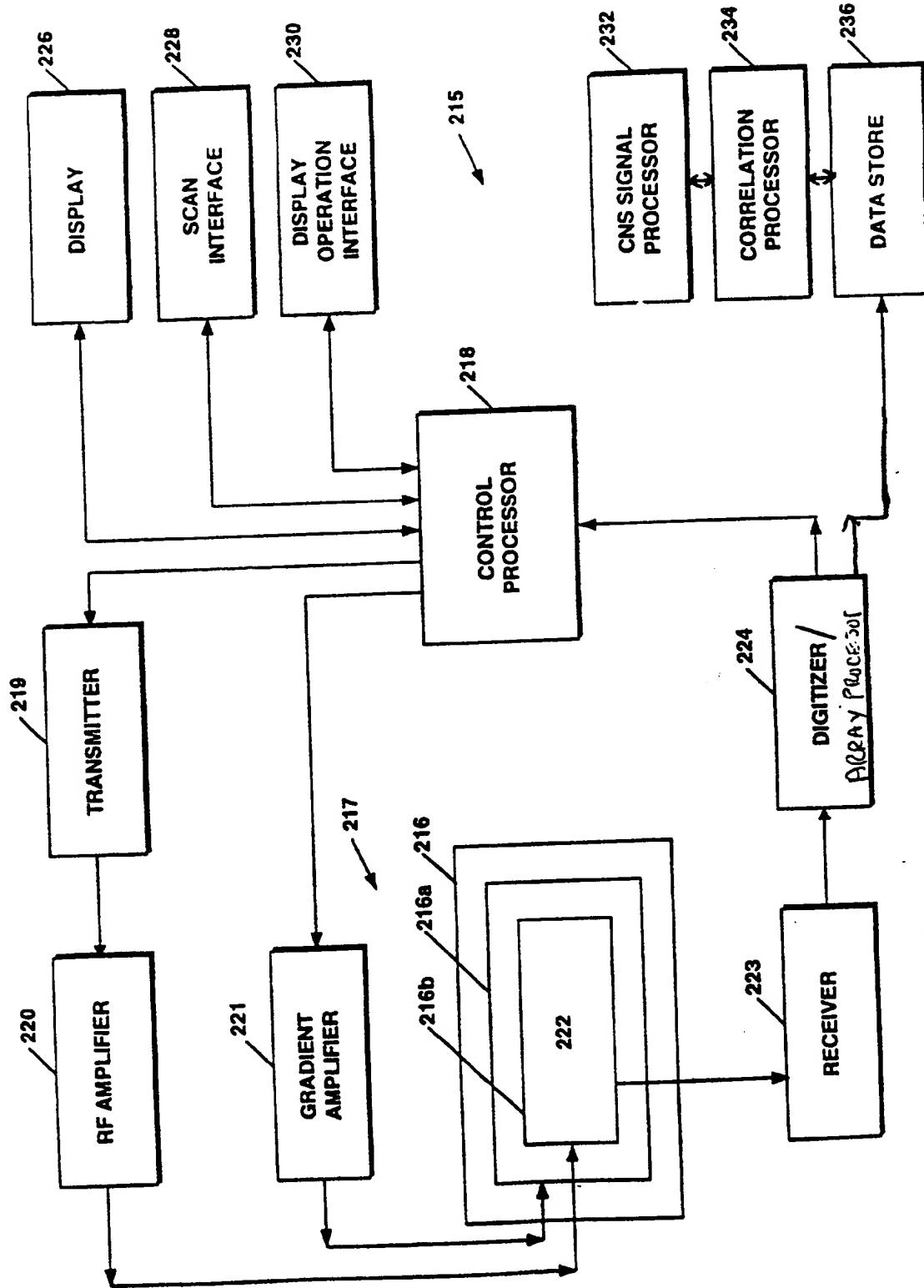
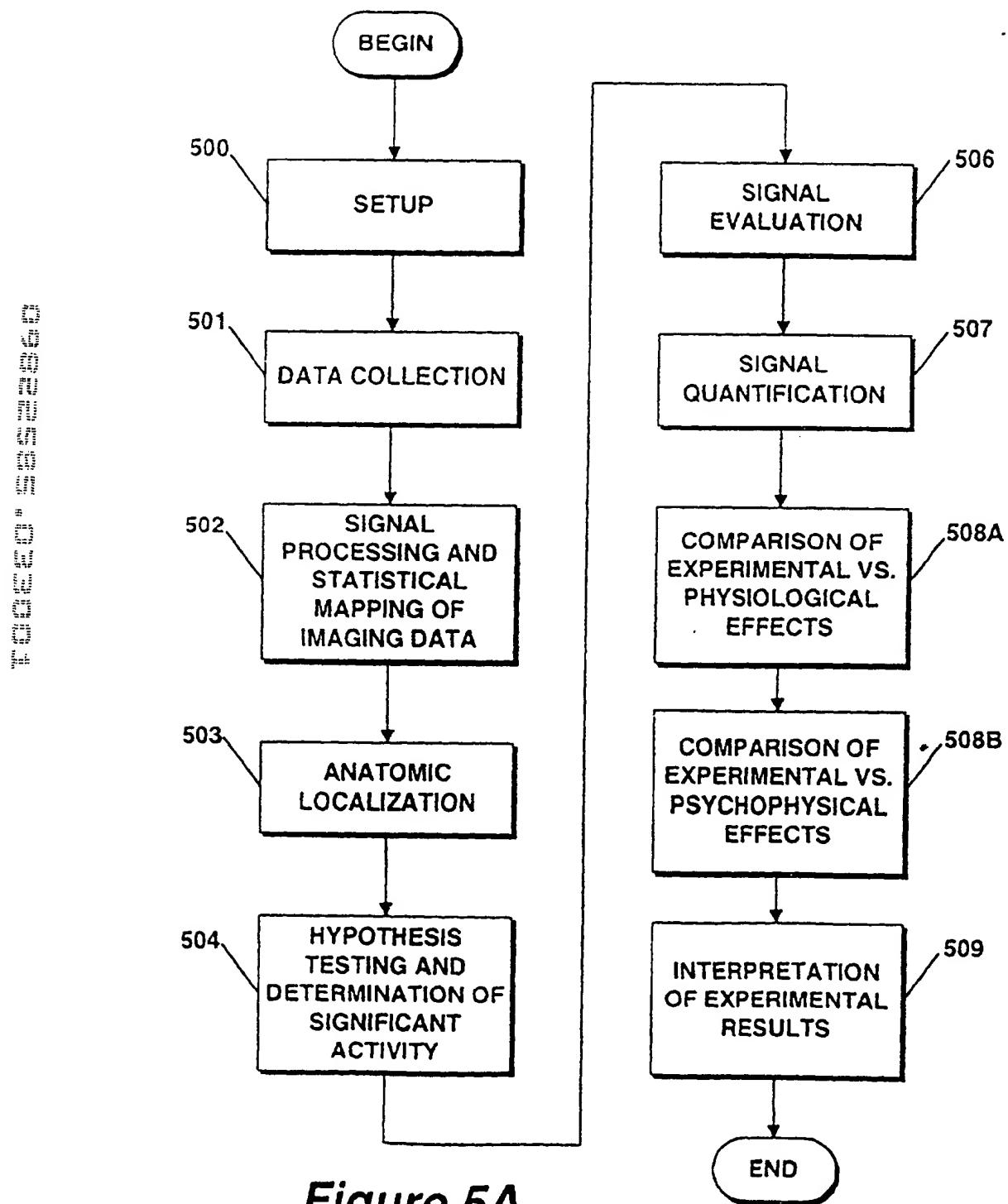


Figure 4

METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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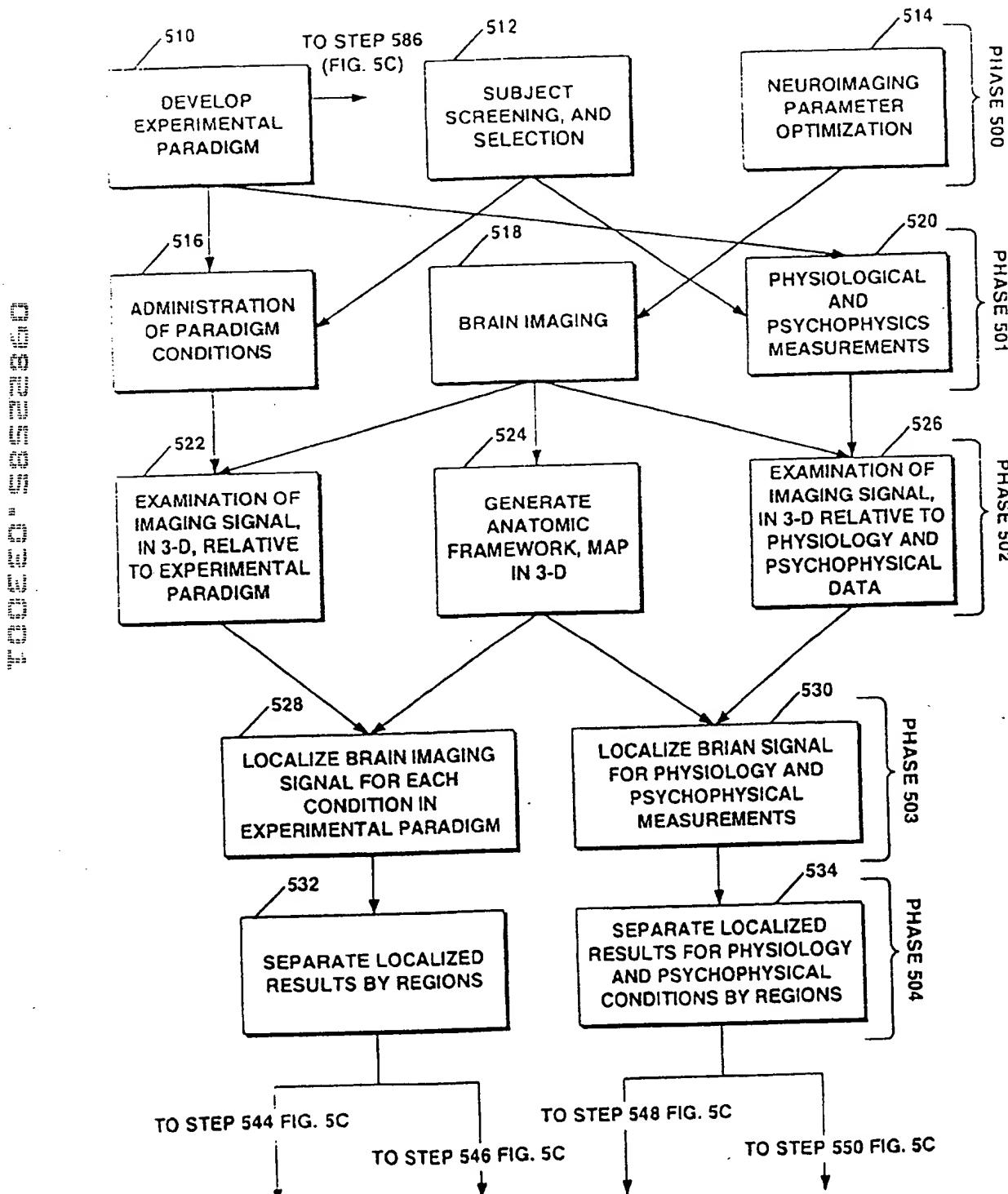
*Figure 5A*

METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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*Figure 5B*

## METHODS APPARATUS FOR OBJECTIVELY MEASURING PAIN, TREATMENT AND OTHER RELATED TECHNIQUES

Lino Becerra, Et Al.  
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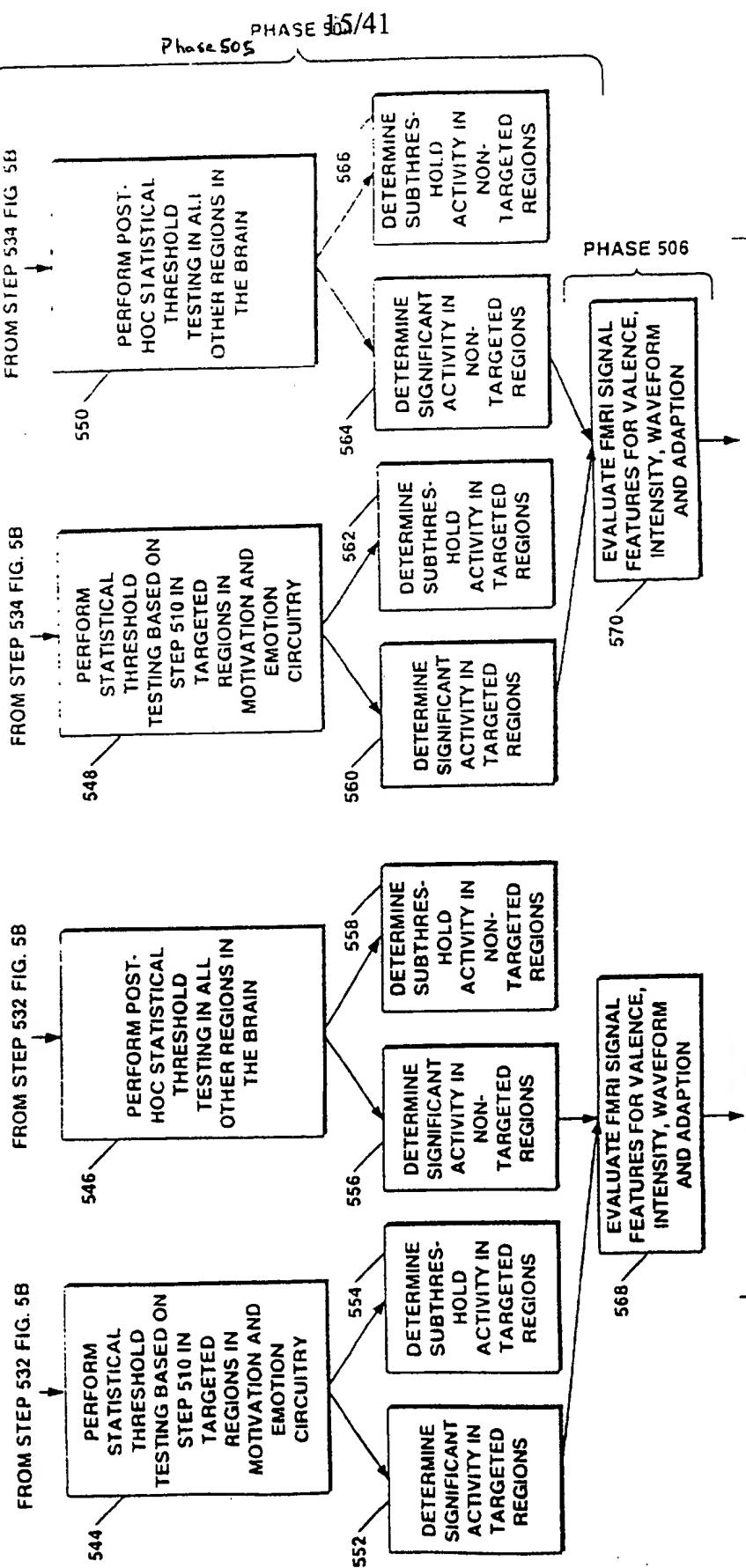
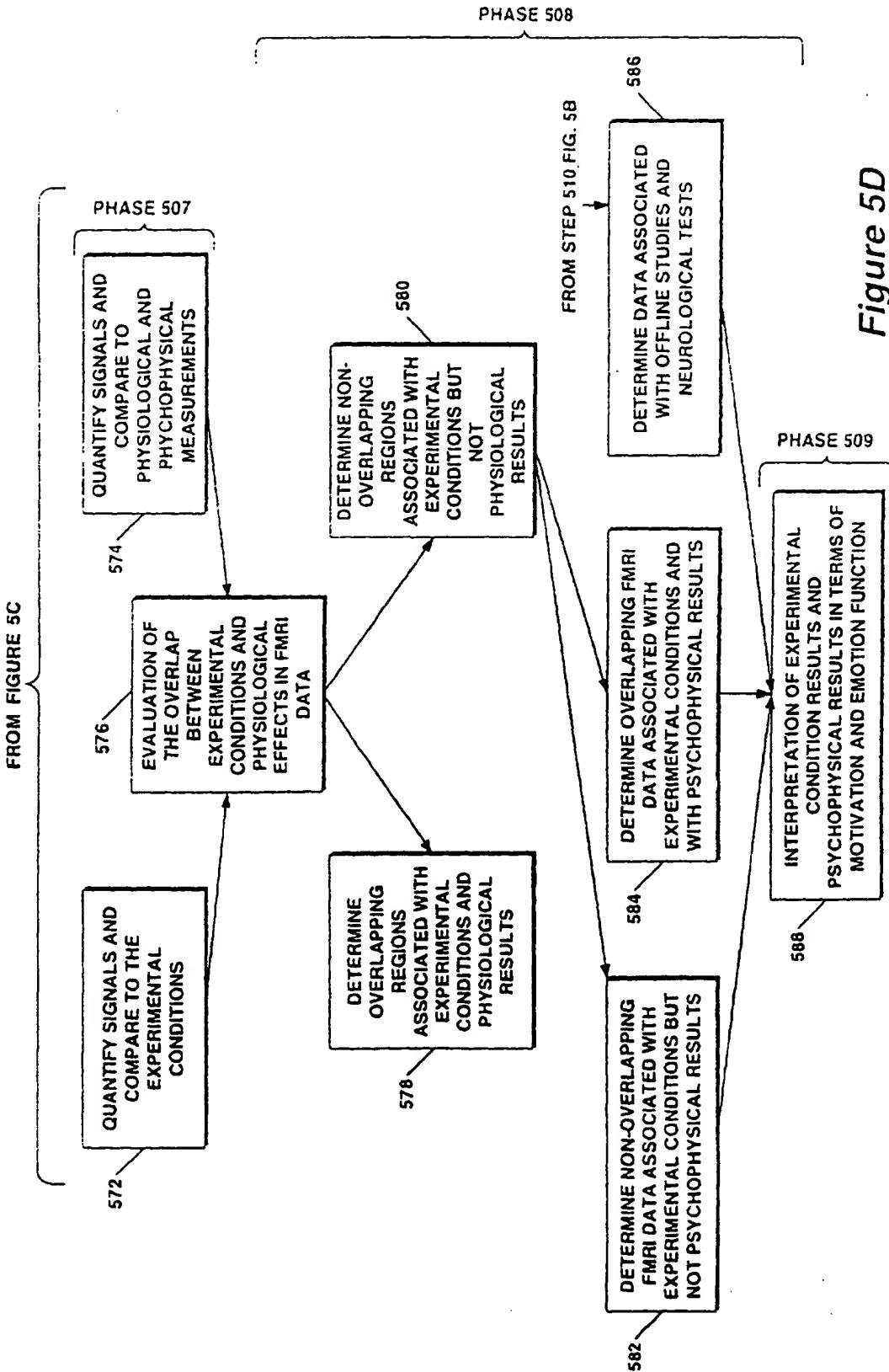


Figure 5C

METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
 PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
 Lino Becerra, Et Al.  
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**Figure 5D**

METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES

Lino Becerra, Et Al.  
CASE NO. MGH-004BUS

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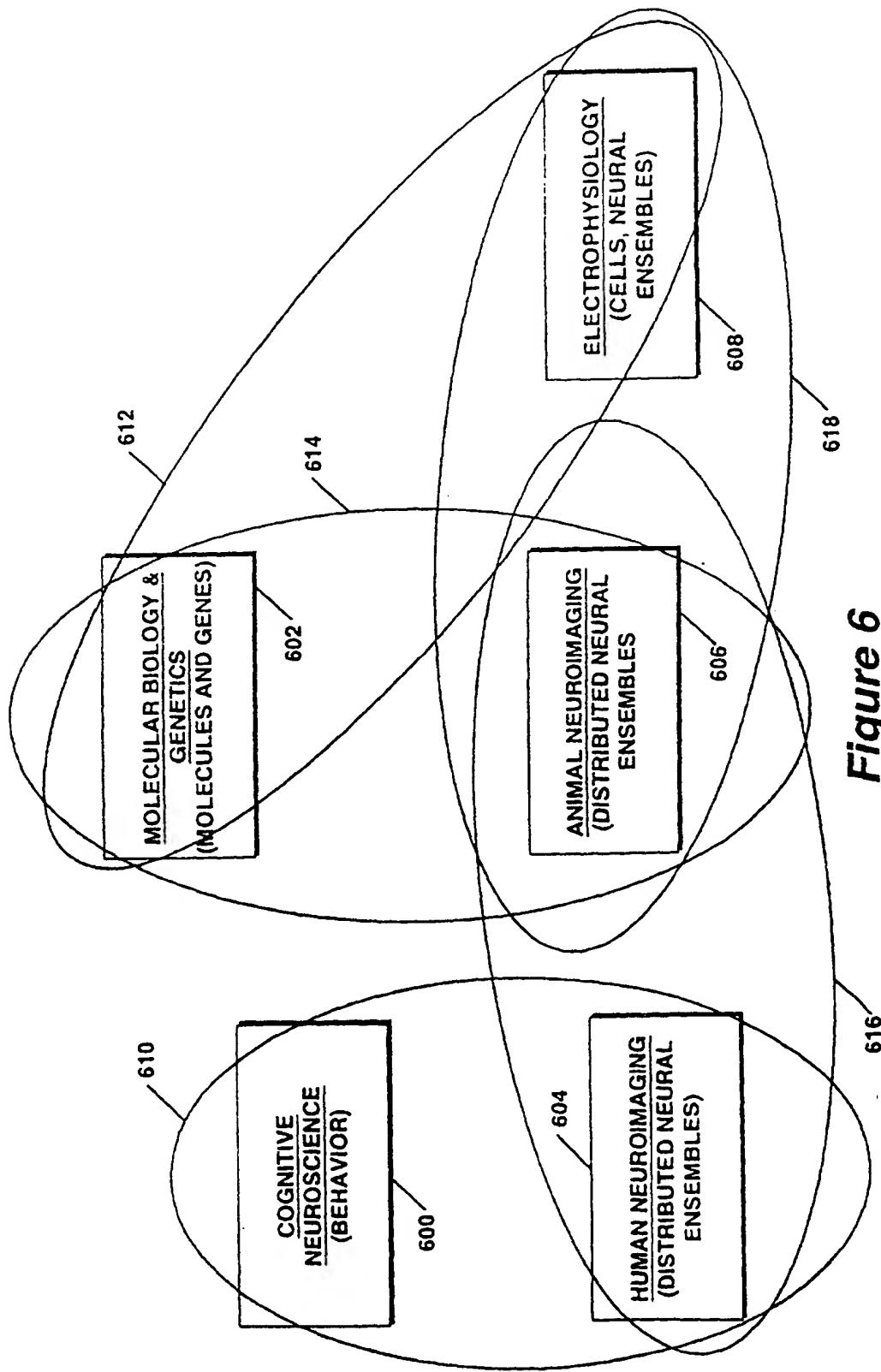


Figure 6

## METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN, PAIN TREATMENT AND OTHER RELATED TECHNIQUES

Lino Becerra, Et Al.  
CASE NO. MGH-004BUS

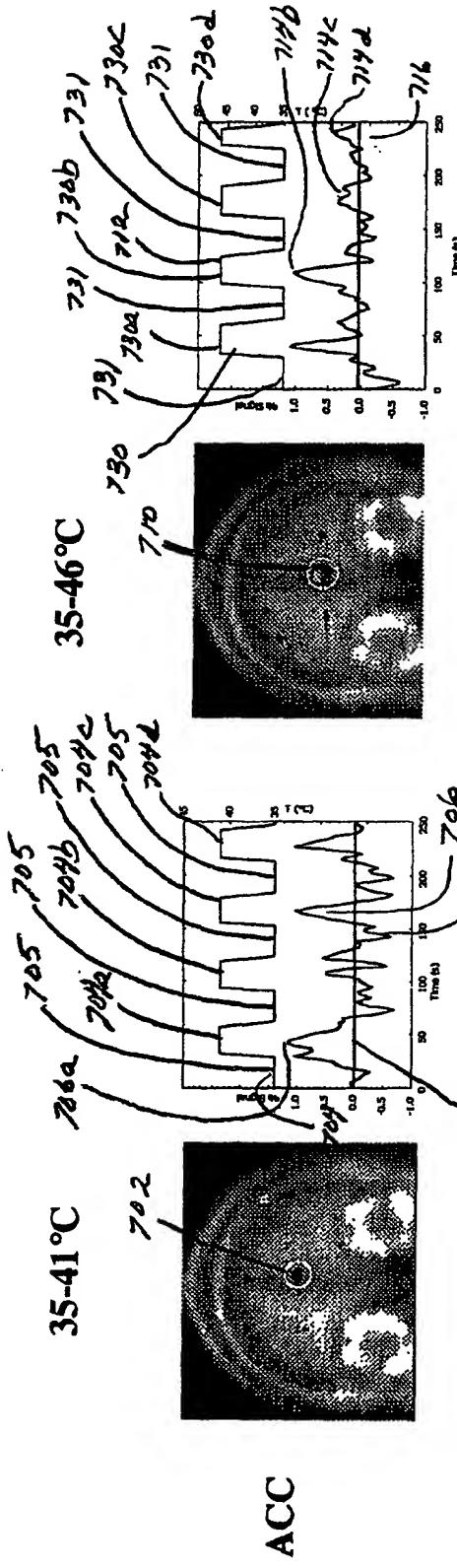


FIG. 7A FIG. 7B



FIG. 7D

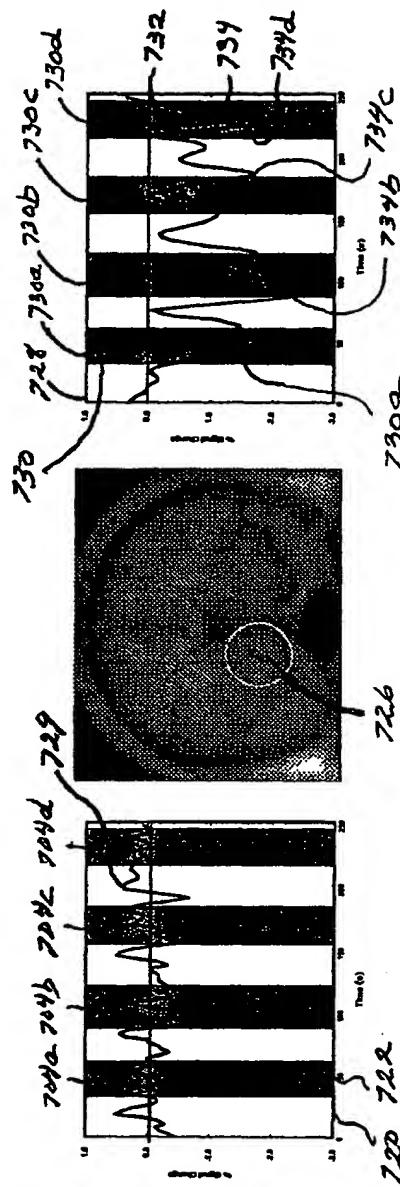
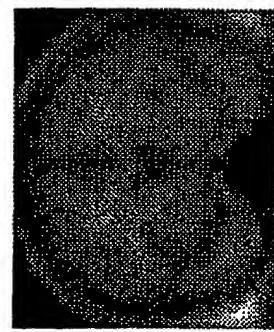
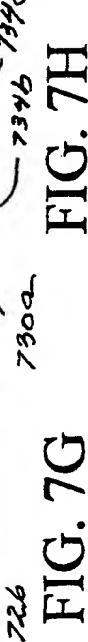


FIG. 7E FIG. 7F



NAC



METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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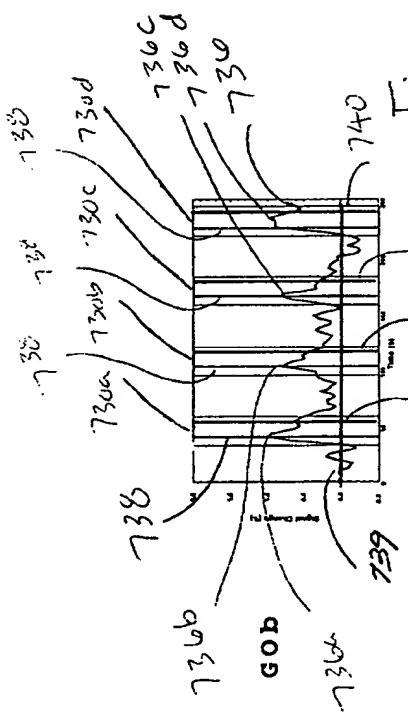
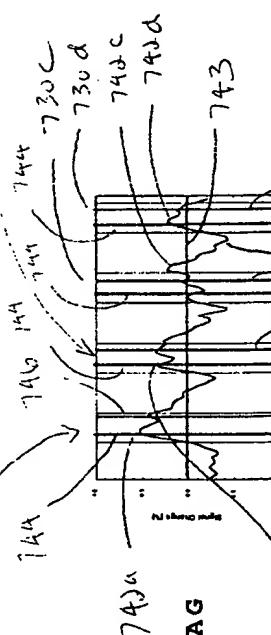
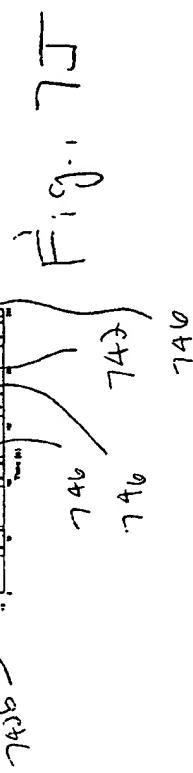


Fig. II



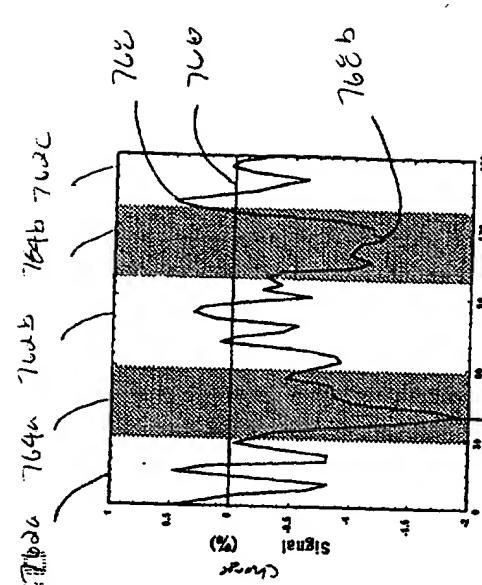
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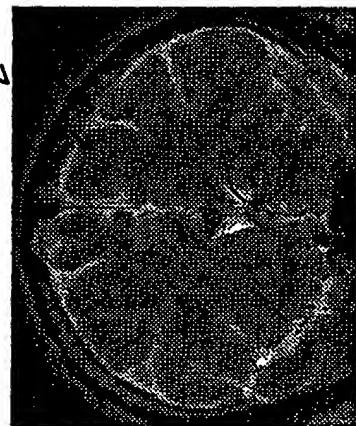
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## METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN, PAIN TREATMENT AND OTHER RELATED TECHNIQUES

Lino Becerra, Et Al.  
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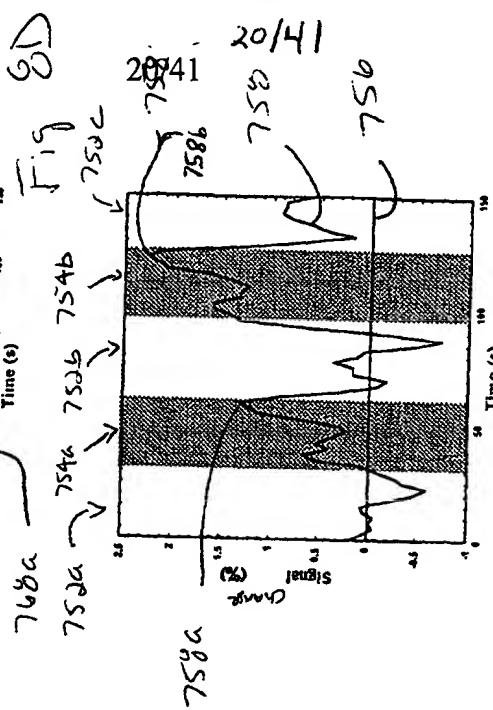
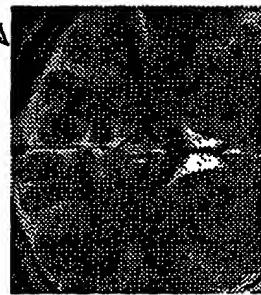


Figure 8C



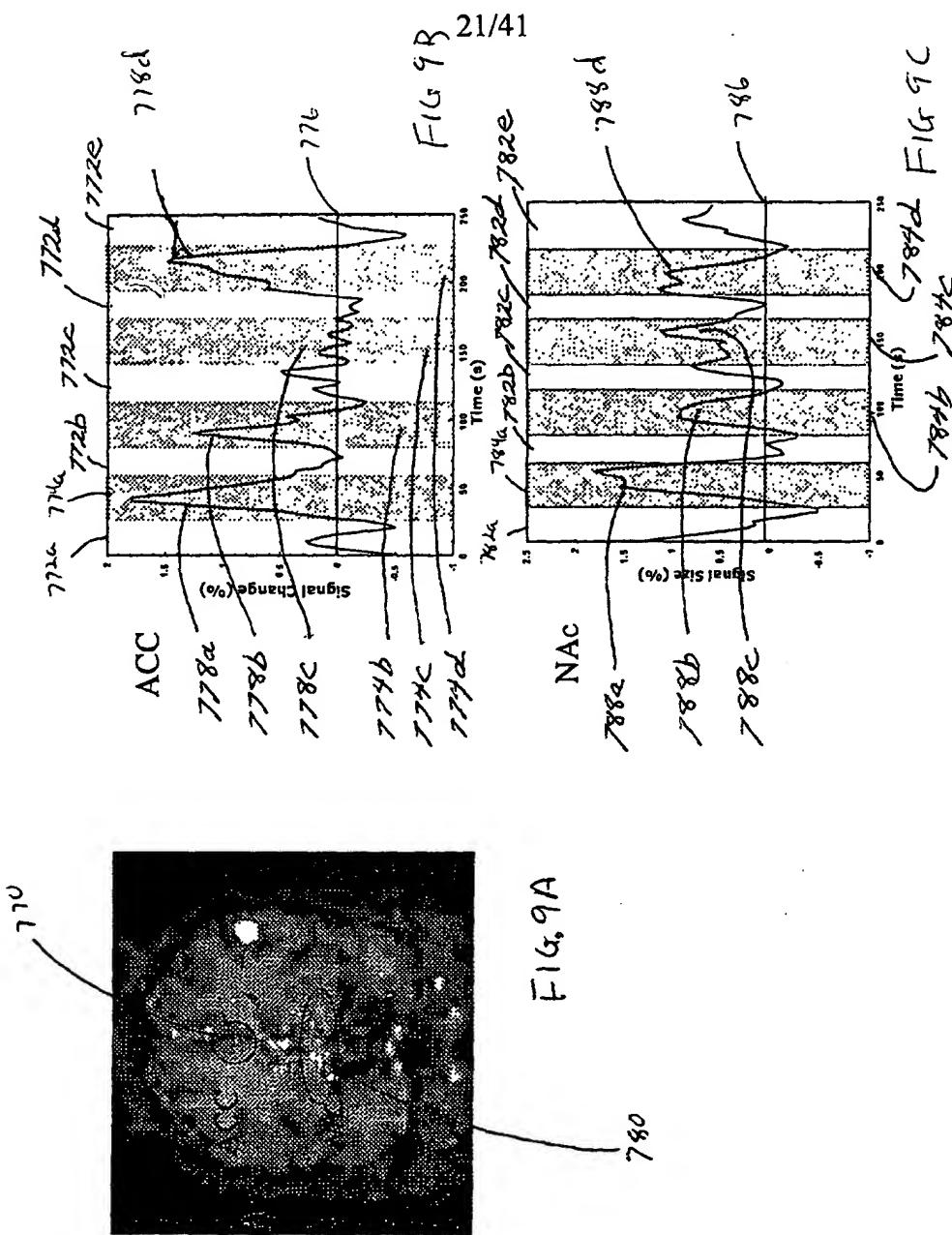
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Figure 8A

Figure 8B

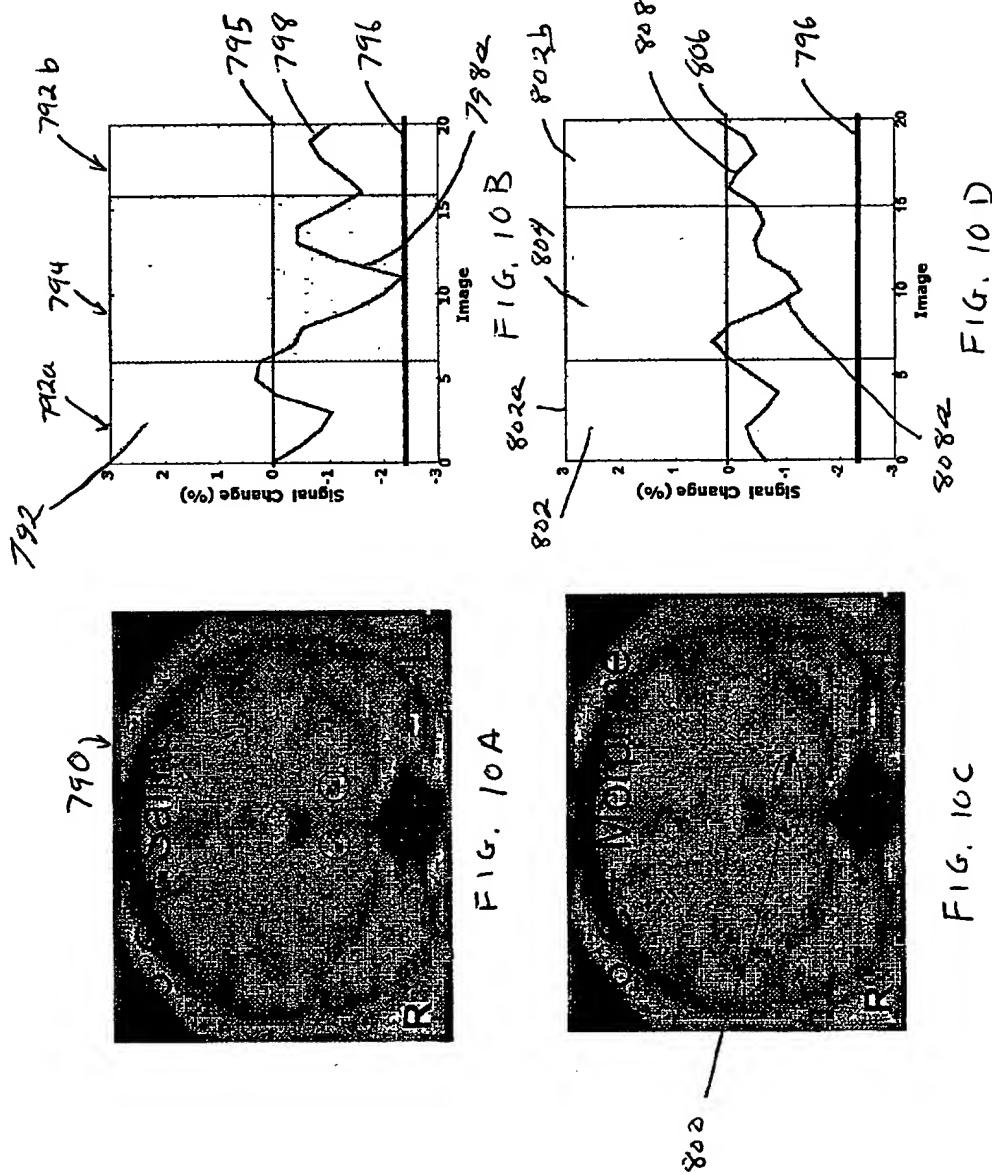
## METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN, PAIN TREATMENT AND OTHER RELATED TECHNIQUES

Lino Becerra, Et Al.  
CASE NO. MGH-004BUS



METHODS APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
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PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
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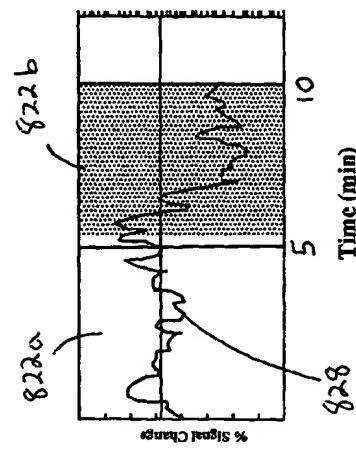


FIG. 10F

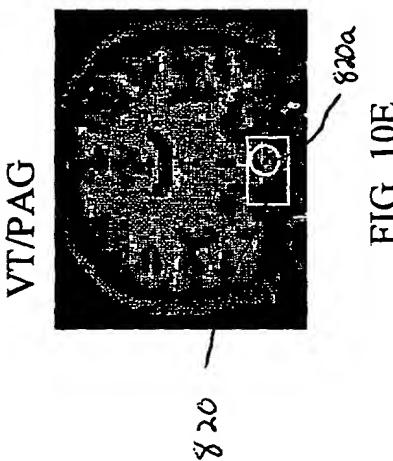


FIG. 10E

METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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Case No. 004BUS

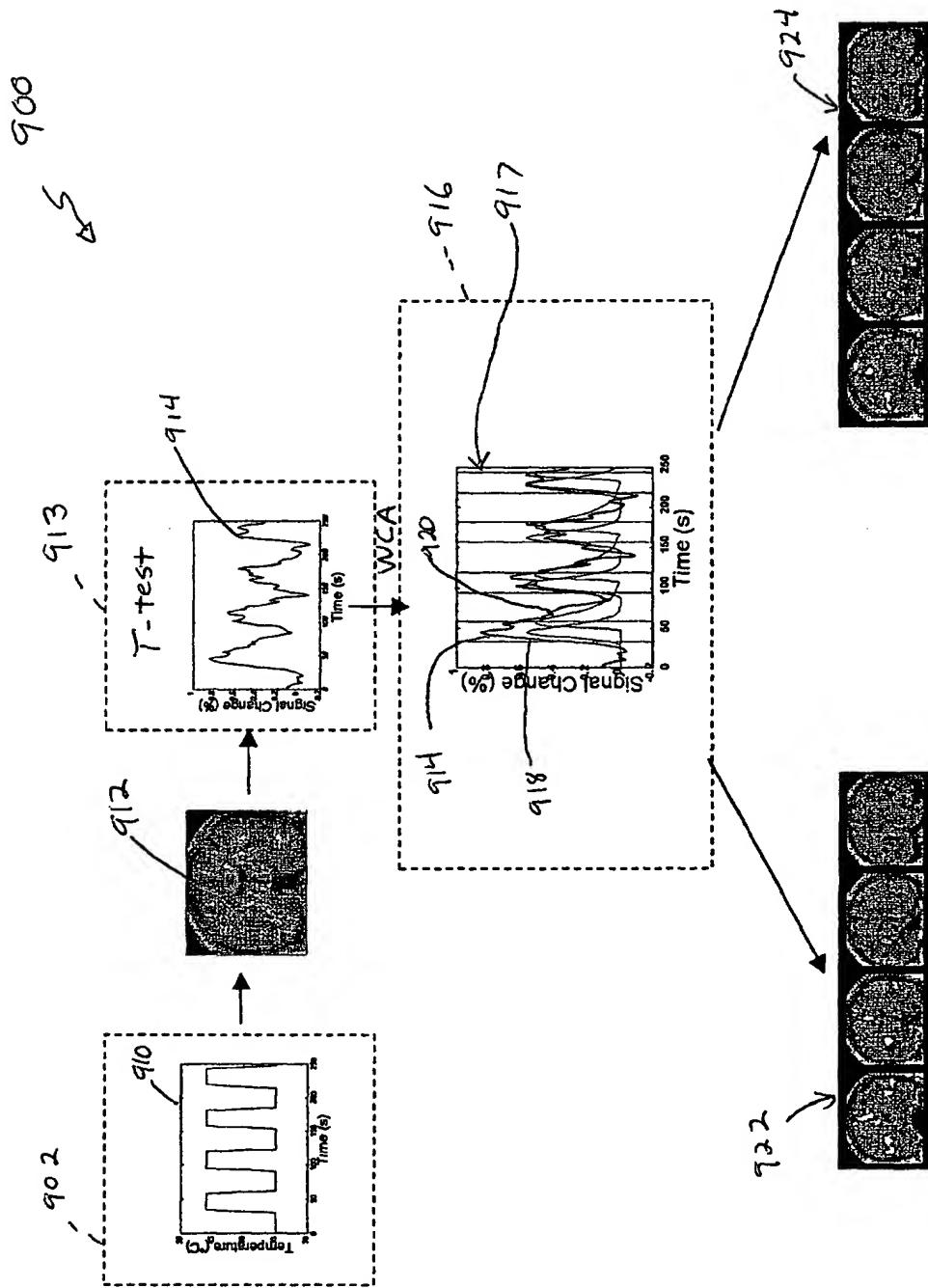


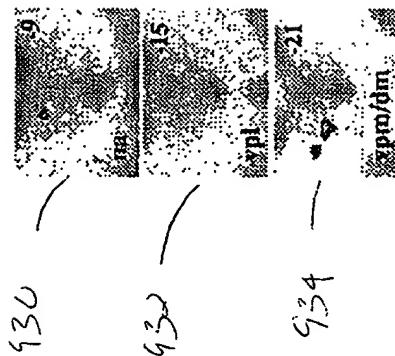
Figure 11

## METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN, PAIN TREATMENT AND OTHER RELATED TECHNIQUES

Lino Becerra, Et Al.  
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Fig. A

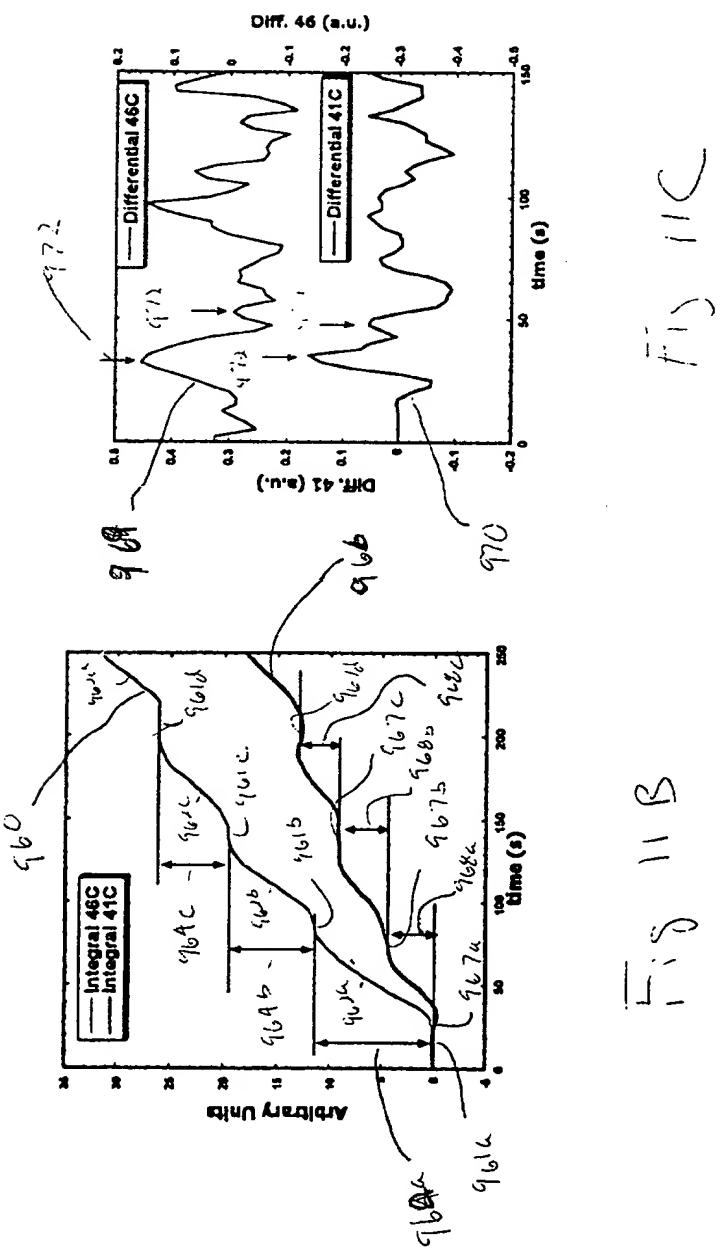


METHODS APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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Becerra, Et Al.

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METHOD APPARATUS FOR OBJECTIVELY MEASURE PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQ  
Lino Becerra, Et Al.  
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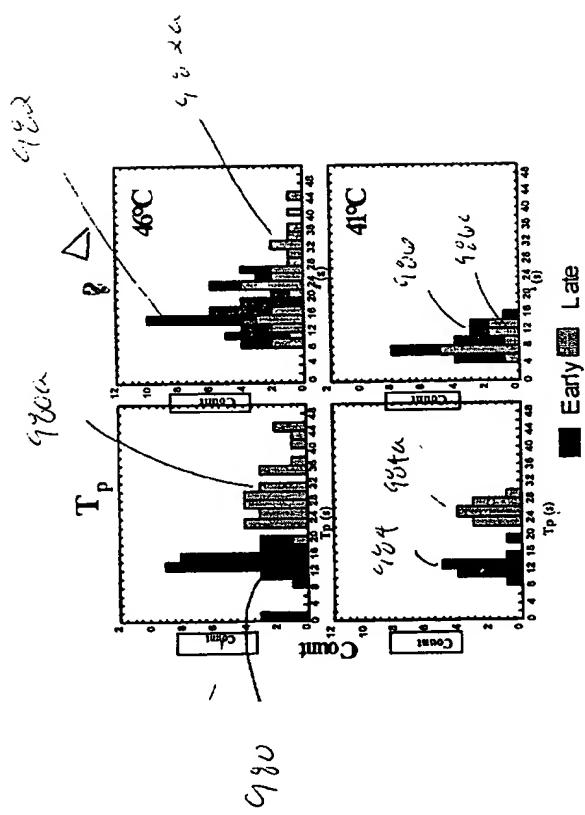


Figure 11D

METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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1990 1991 1992 1993 1994 1995 1996 1997 1998 1999

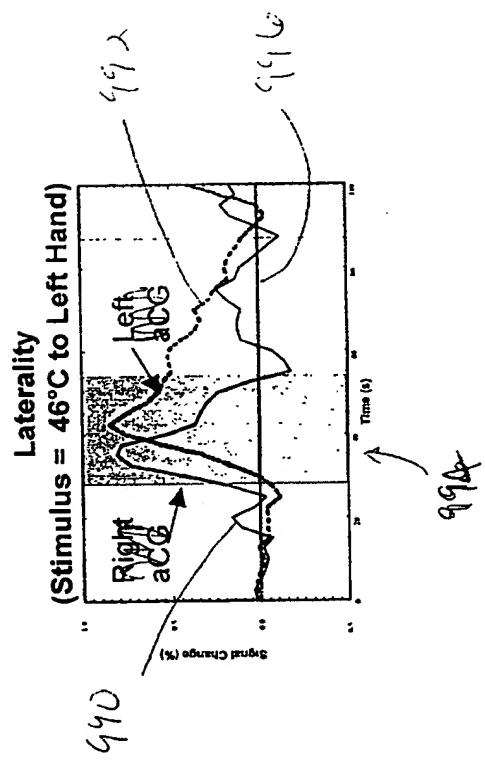


Figure 11E

METHOD AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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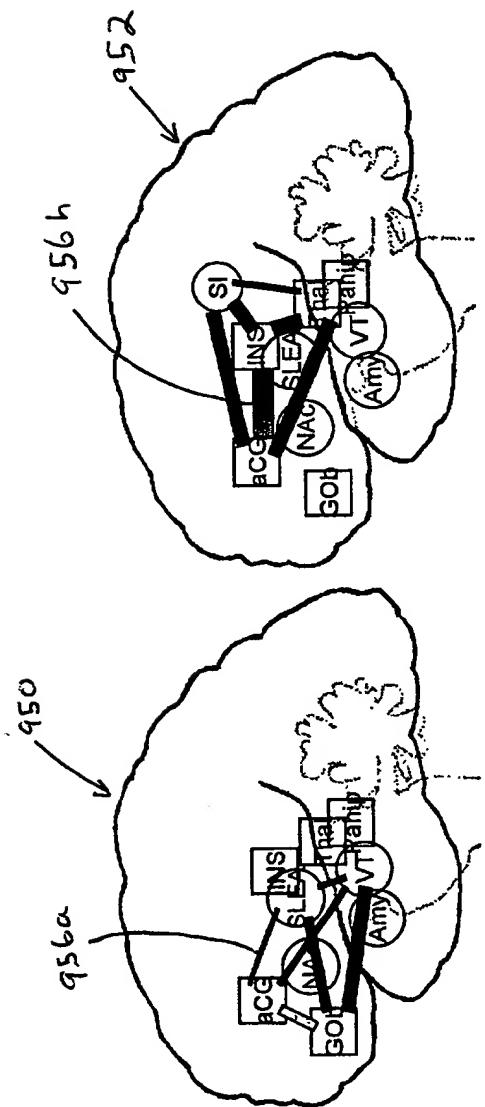


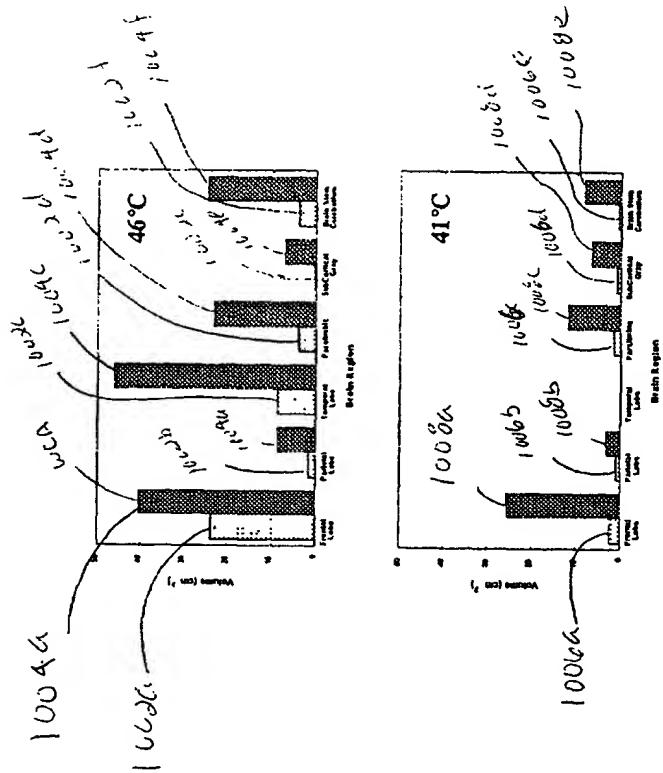
FIG. 11F

METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES

Lino Becerra, Et Al.  
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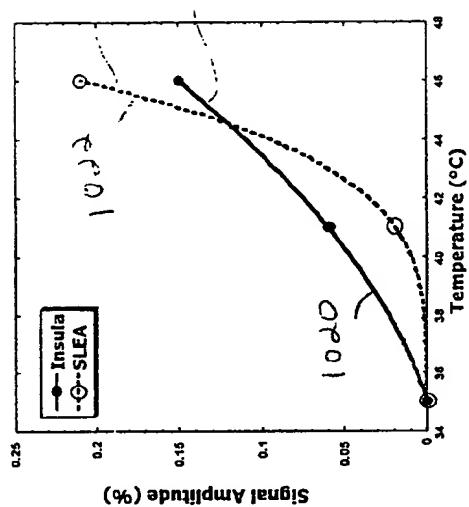
Figure 11 G



METHOD APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
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Figure 11 H



METHODS APPARATUS FOR OBJECTIVELY MEASURE PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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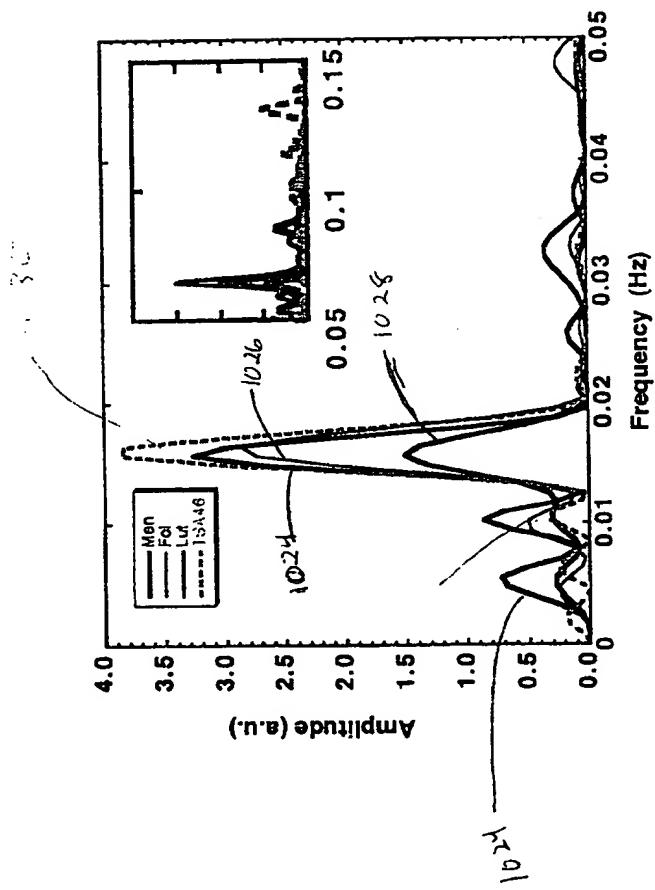
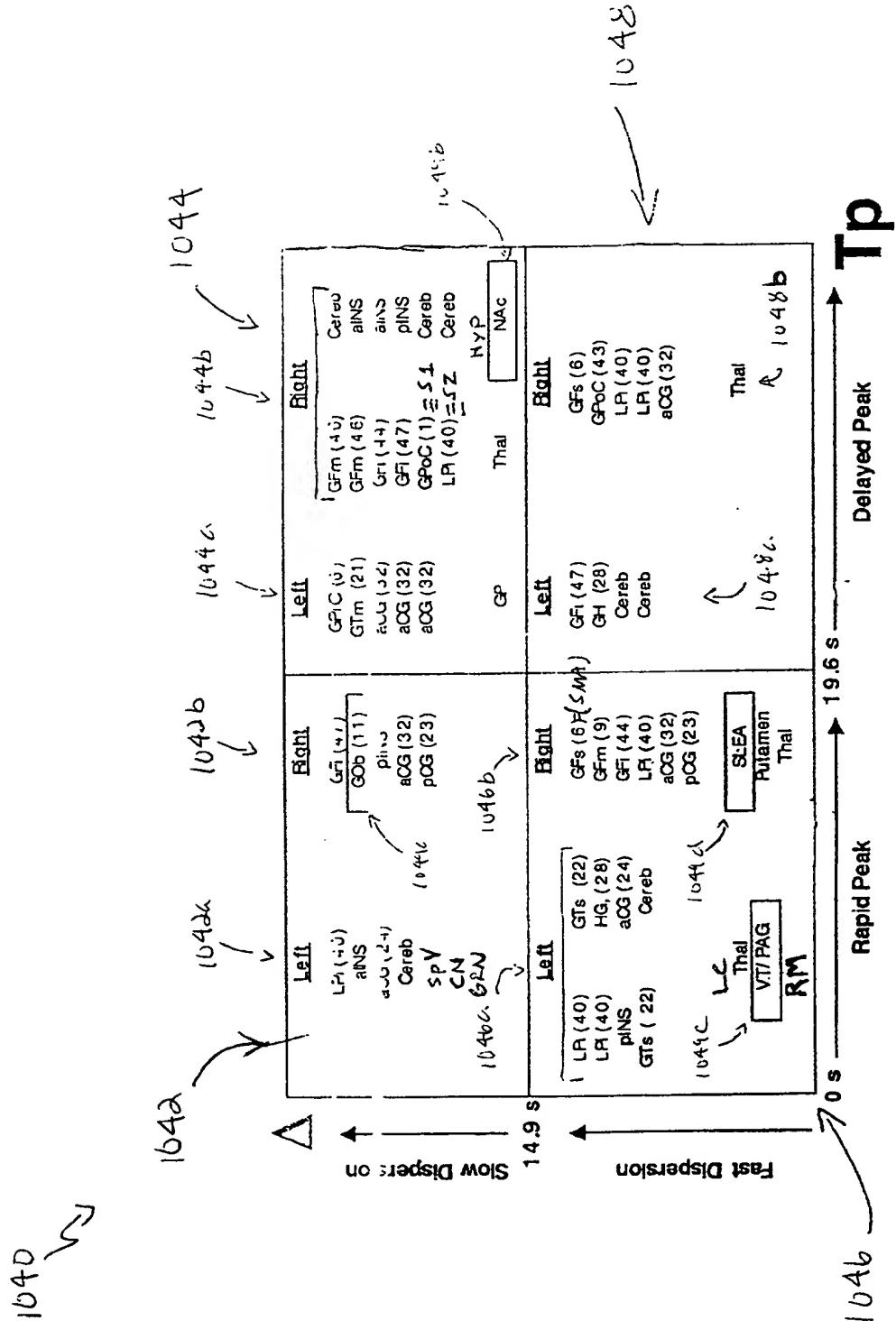


Figure 11

METHODS APPARATUS FOR OBJECTIVELY MEASURE PAIN,  
 PAIN TREATMENT AND OTHER RELATED TECHNIQUE  
 Lino Becerra, Et Al.  
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METHODS APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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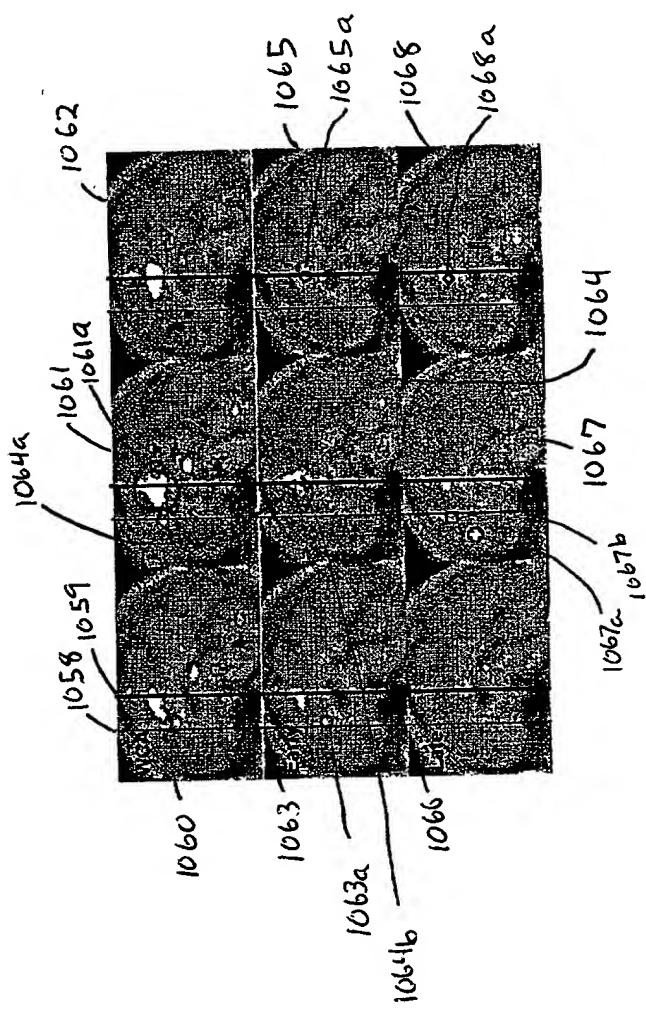


Figure 11K

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METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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FIG. 12A

FIG. 12

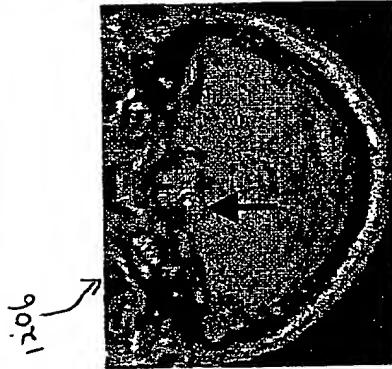
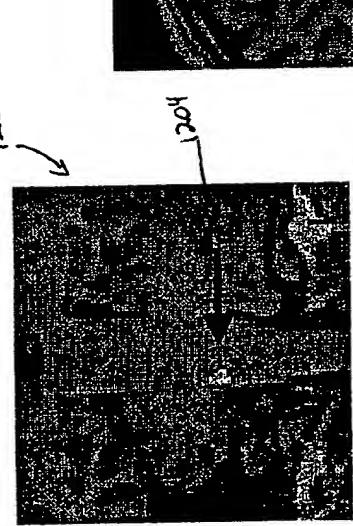


FIG. 12B

FIG. 12D

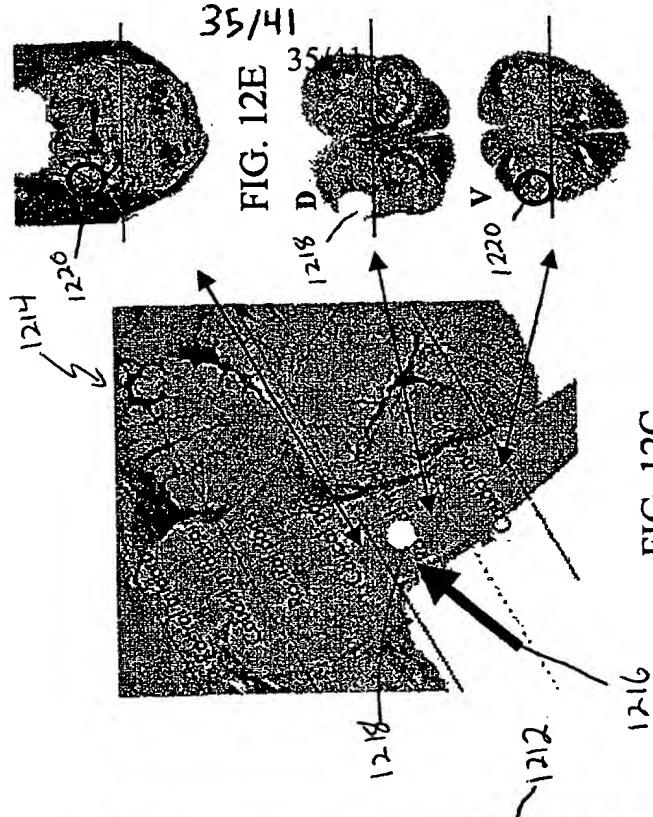


FIG. 12E



FIG. 12F

FIG. 12C



METHODS APPARATUS FOR OBJECTIVELY MEASURE PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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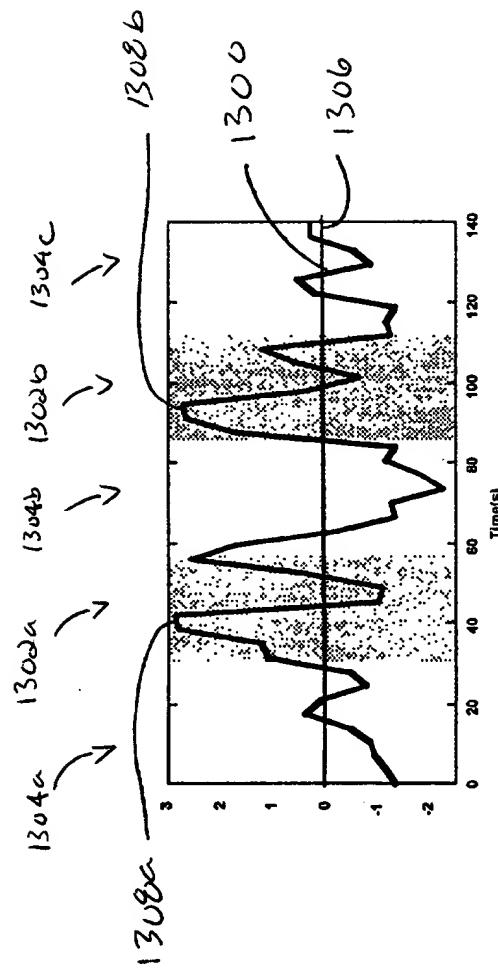


Fig 13

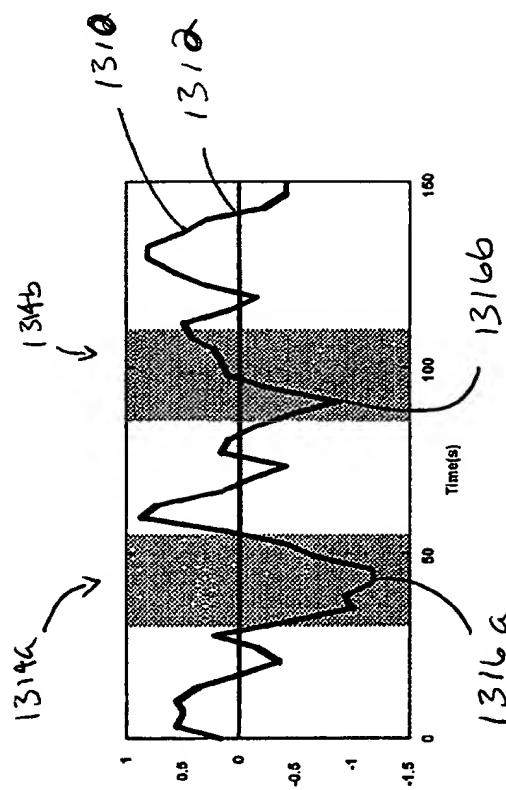


Fig 13A

METHOD AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
Lino Becerra, Et Al.  
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FIG. 14B

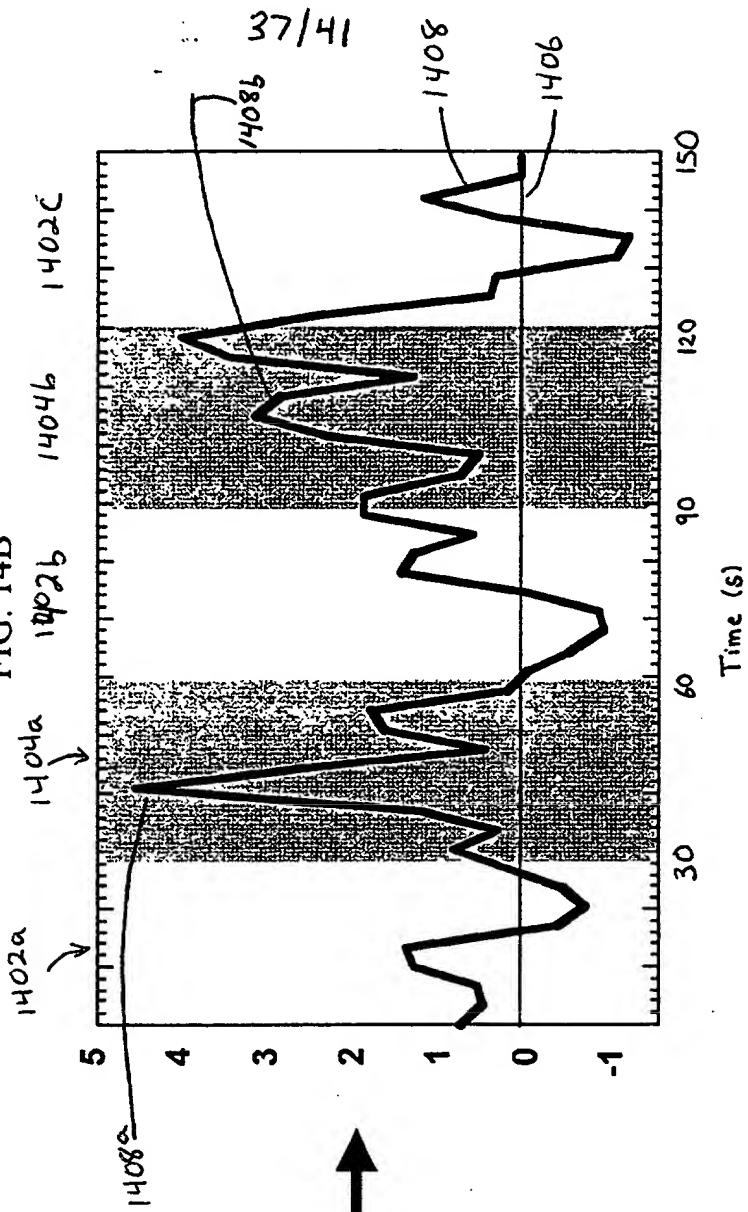


FIG. 14A



METHODS AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
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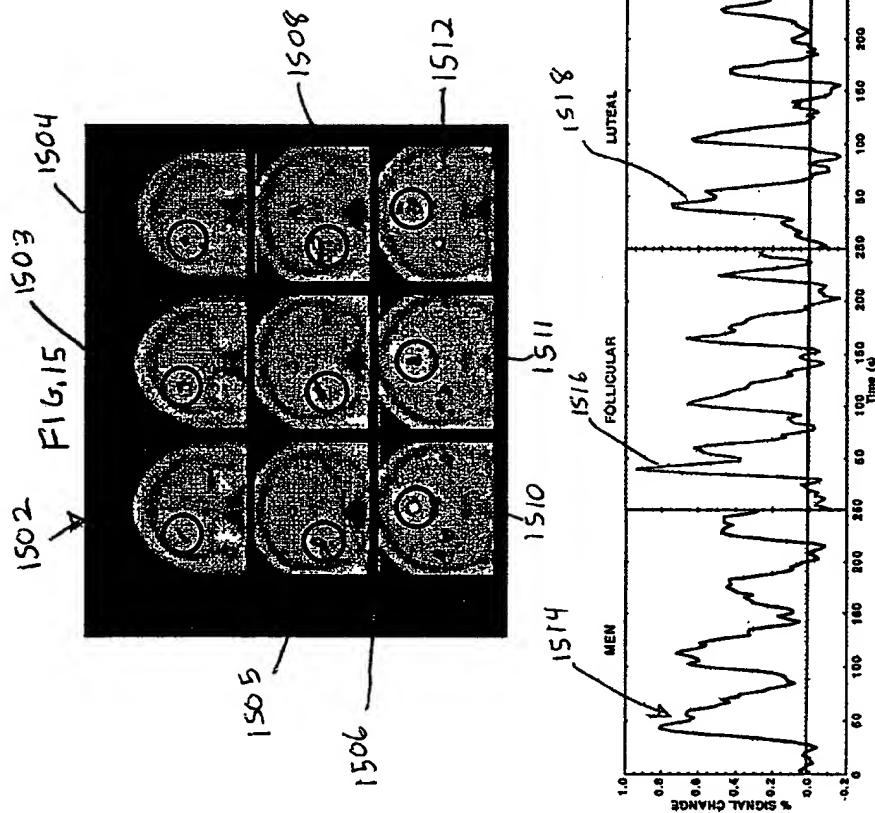


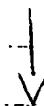
FIG. 15A FIG. 15B FIG. 15C

METHOD AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES

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Begin



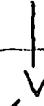
1602

Select Candidates for  
Clinical Testing



1604

Select First and  
Second Subsets of  
Candidates



1606

~~Exposure~~ Candidate  
Subsets

Administer Drug or Placebo to Candidate Subsets



1608

Perform First  
Neuroimaging Scan



1610

FIG. 16

~~Repeat~~ Candidate  
Subsets

Administer Drug or Placebo to Candidate Subsets



Perform Second - 1612  
Neuroimaging Scan



(A) CORTO F.S. 16 A

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(B) (from Fig. 16) *Fig. 16A*

Measure physiological and psychophysical

Responses of first and second  
Candidate Subsets

↓  
Measure physiological and psychophysical Responses  
OF First and Second Candidate Subsets

↓  
Correlate Neuroimaging Data  
with Psychophysical and Physiological  
Responses

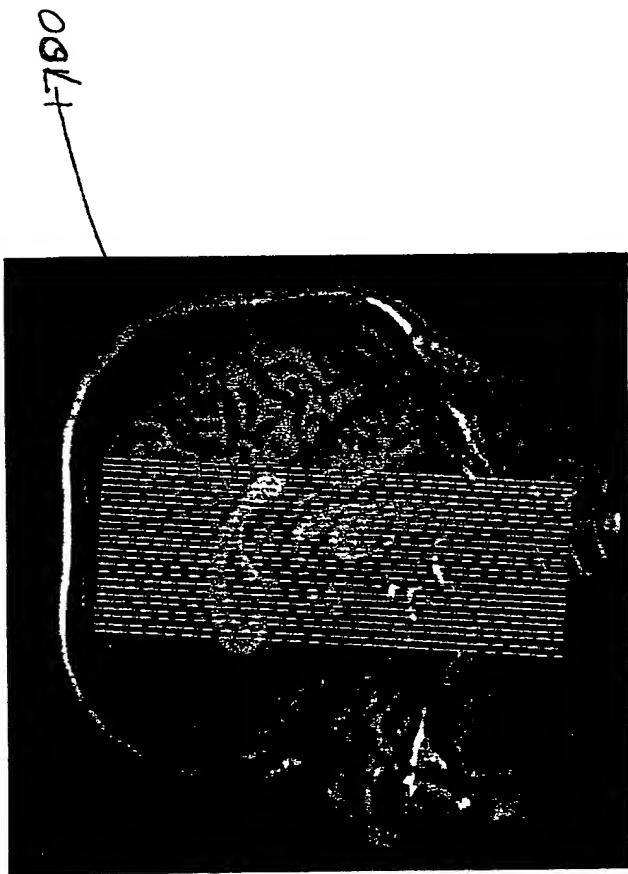
↓  
END

Fig. 16A

METHOD AND APPARATUS FOR OBJECTIVELY MEASURING PAIN,  
PAIN TREATMENT AND OTHER RELATED TECHNIQUES  
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Fig. 17



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